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VOLUME 4 NUMBER 5

AUGUST 1983

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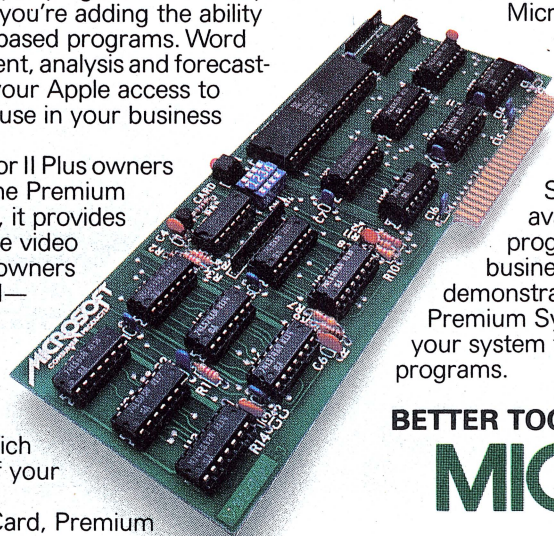
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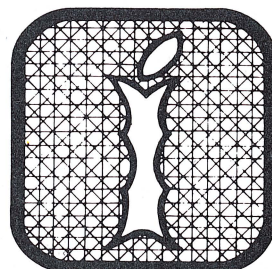
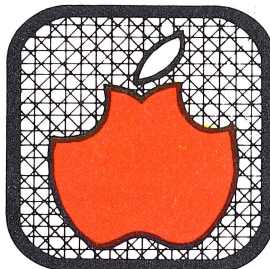
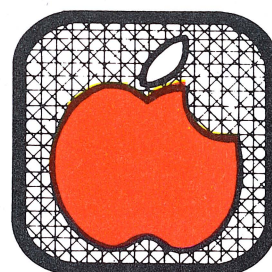
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# Take a bite...



Vol. 4, No. 5

August 1983

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# Apple Orchard

Vol. 4, No. 5

August 1983

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**advertising material, manuscripts, etc.:**

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**908 George Street**  
**Santa Clara, CA 95050**  
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APPLE ORCHARD (ISSN 0277-1950) is published monthly by the International Apple Core, Inc., 908 George St., Santa Clara, CA 95050. Second Class Postage paid at Santa Clara, CA and additional entry points.

**Subscription Rates (U.S. funds):** \$24.00 for 1 year, \$45.00 for 2 years in the U. S., FPO & APO; \$30.00-1 yr., \$55.00-2 yr., in Canada; \$36.00 (surface), \$48.00 (airmail) in Mexico, Central America, Caribbean Islands, Philippines, Samoa; \$36.00 (surface), \$60.00 (airmail) in South America, Europe, North Africa; \$36.00 (surface), \$72.00 (airmail) in Asia, Middle East, South Africa, Australia.

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## Textfile

Apple Orchard is now a monthly publication. That's right, monthly. In about 18 months, we have come from publishing four times a year to 12 times, competing on considerably less than equal financial terms with megabuck publishers, but building a stable base of readers, advertisers, and friends. It's an exciting achievement for our small staff and many friends, but it brings with it a new responsibility.

For those of you who are subscribers at our old nine-time rate, we're adding one issue to your subscription if it expires before the end of 1983; two copies are being added if the old expiration date was after the end of 1983. That roughly compensates for the fact that our subscription rate is a bit lower on a per-issue basis. Also, for the first time, we have an incentive for a two-year subscription: it's \$24 for one year, and \$45 for two years in the U. S. Outside of the U. S., the rates are as shown elsewhere in this issue, and we've added the air mail postage categories for those international subscribers who requested them.

Other changes include a new advertising representative firm, headed by a human dynamo named Jay Eisenberg. If you're a prospective advertiser, call him at (213) 467-2266 . . . but then, he or one of his staff has probably called you already. We have quite a story to tell. Jeff Ginsberg, who had been handling that chore, will now be taking care of some special projects for us.

If you're one of those who has been hearing about the pros and cons of the Apple ///, we invite you to read "Coming Full Circle", by Kevin Fitzmaurice of Omaha. It's a classic tale of love/hate/love, including a summary of features. Funny thing: the rumor is that Apple is abandoning the Apple ///. Well, there are almost 100,000 ///s out there, an installed base that many companies would love to have. The /// ranks fifth or sixth among computers in terms of sales, but of course the II is so far ahead that it causes a distorted perspective. Well, Apple people claim that abandonment is not in their minds, and invite us to watch what happens in the next couple of months. We're watching.

Meanwhile, the largest installed base for the CP/M operating system is on Apple computers, and we're seeking to devote more space to this "old-timer". Beginning on Page 20, Woody Liswood takes a look at WordStar, the best-selling word processor for CP/M (so far). Also, he reviews Proof Reader, which checks spelling. Next month, we'll feature a program that converts text files from CP/M to SOS on the Apple ///.

The variety of articles in this Apple Orchard issue also includes Part Two of John Uhley's probing into the Disk II drive, covering reading and writing to and from disks without DOS. Joe and Chris Jasper provide a small program, actually a subroutine, for calculating moving or running averages. Mike Kramer shares his Apple /// BASIC Compare program, and John Matthews covers "Handcrafted Compiling", tactics for better use of Assembly language.

And speaking of sharing, that's what Apple Orchard is; a means for sharing information. Monthly or not, it is, and will be, no better than the sum of its contributions. If you have even the slightest thought of writing a long or short article about Apple computers, their uses, innards, software, etc., for a magazine, drop us a line and we'll send you a copy of our author guidelines. We look forward to hearing from you.



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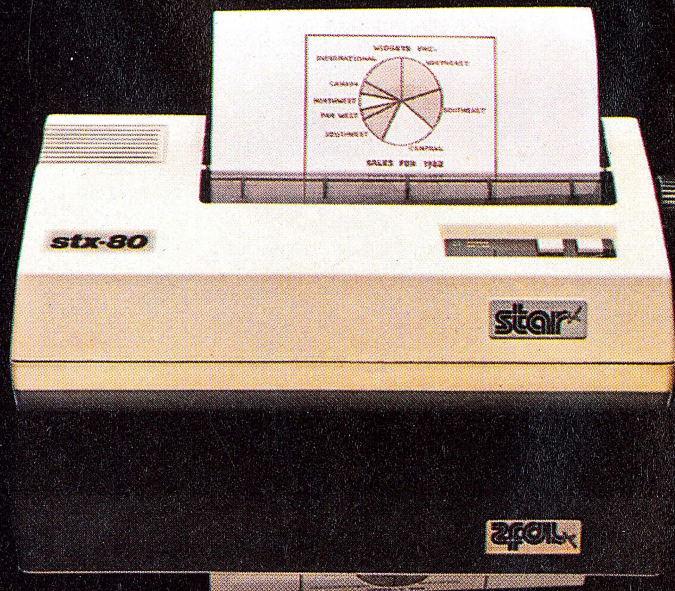
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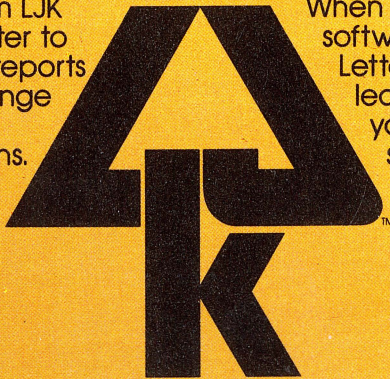


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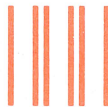
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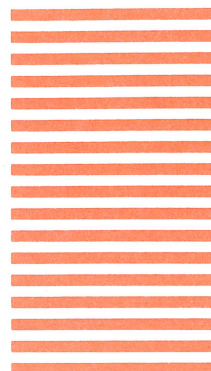


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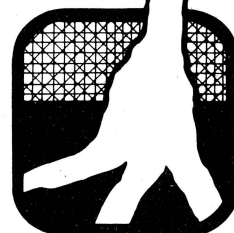
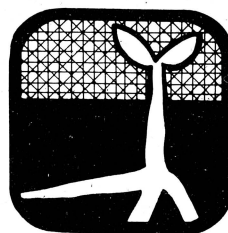
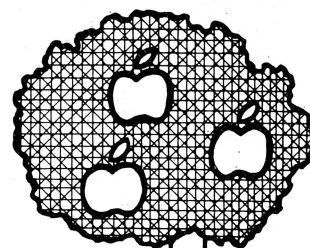
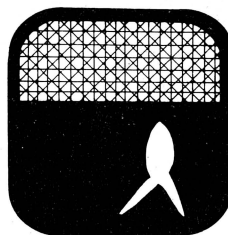
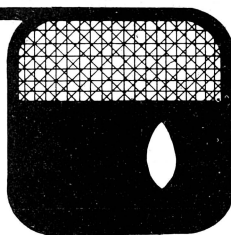


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# Planting a seed...



## The Management Converts

Today, the "progressive" manager is one who spearheads the use of microcomputers as business tools in his or her organization. More and more chests puff out proudly as boxes beige and gray/blue appear on desks. Most of these folks would have you believe that it was always this way, but it ain't necessarily so. The fact is that the acceptance of personal computers in institutional settings did not come easily.

The machines were seen by some managers as "toys", using "dormitory software". The most common avoidance approach was, and is, to say, "We're studying it", as long as possible. Reluctant managers may limit the scope of activities in which the computer is to be used; or he may say that these things are fine for menial work, but that managers have better things to do than to play with keyboards.

That last one at least has a ring of plausibility to it. There is, after all, no real substitute for a human being when it comes to dealing with other human beings, and that's what management is. Managers are continually being warned to combat the instinct to do their subordinates' jobs for them, and to rely on team members to know their jobs. But management involves the use of information to plan, control and evaluate the activities and performance of others. If we achieve blissful ignorance, then how do we assess the decisions, judgment, and promotability of those subordinates? And how do we get the relevant information to make the decisions, in time to be most effective?

Enter the computer, the best information-processing tool yet devised to aid humans. In the personal area, the Apple computer and its imitators have been even more effective than the relatively unapproachable mainframe computers. The "business-institutional" market segment is growing rapidly, as managers describe the new small computers in glowing terms.

The funny part is that in a majority of organizations, large and small, the microcomputer didn't arrive with fanfare at the front

door; rather, it was smuggled in through the servants' entrance by employees who had become computer hobbyists (not "hobbiests", please), and who had seen the value of this tool in the performance of their work. Unless the hobbyist also happened to be the chief executive, what followed was a process of system development, demonstration, proposal and rejection, iterated until grudging approval was given. That grudging approval turned to the appropriation of credit by managers after the "toys" proved successful.

The idea that managers should concentrate on the humans whom they manage is a good one in an era when computer-generated data substitutes for human judgment; having a pile of printouts to point to builds "justifiability" and fends off much criticism. That human-oriented sentiment all too often obscures another reason why some managers are reluctant to use a microcomputer: the folk wisdom is that managers don't use keyboards. Keyboards are for secretaries, for clerks, for "girls".

Another funny thing: the managers who have taken to keyboards attached to Apples have scored innumerable successes as a result of that interaction. That's a trend that should continue: the computer-using manager will outdistance his or her illiterate brethren by greater distances.

And in terms of ease of use, computers are coming to everyone, even managers. Apple's Lisa is an example. The manager doesn't have to be a programmer or a typist, yet he or she can make use of the computer as a tool. Unfortunately, a computer will not guarantee success. The key is in how, and how well, it is used.

*Reidigh*



# Coming Full-Circle

*by Kevin Everett FitzMaurice*

**T**he time had finally come when I could afford to upgrade my personal computer system. Not that my Apple II Plus had something wrong with it, but rather I wanted a system that could do more, and do it better. After reading about all of the problems the Apple /// was having, I decided that perhaps my happy relationship with Apple was coming to an end.

I made quite an extensive search. My bulging literature library is proof of that. Yet, I simply could not find one personal unit that could meet all of my requirements. By this time I was beginning to hear that Apple had been hard at work remaking the Apple ///. I decided to give Apple the benefit of the doubt, and take a second look. Lo and behold, here it was right in front of me, the very computer I had been searching for all along!

What I would like to do now, is to give you a clear and simple list of the features of the Apple /// on a single page or two (See Figure 1). You should then be able to use this list as a yardstick for comparisons of different micros. Then, we'll look at a few of the important features of the Apple ///.

## **The First RAM Machine**

One of the most intriguing and unique

features of the Apple /// is that it is the first RAM based machine. While all the other new personal computers have greatly increased ROM, the /// has almost completely done away with it! Inside the /// there is only 4K of ROM which does a diagnostic check of the ///, and then automatically boots whatever disk is in the built-in system disk drive. What this means is that you are not bound to any language or operating system, nor do you have to work around them to use different ones, nor are you stuck with outdated ROM! Any language or operating system is just loaded in on disk first thing. You will never be caught with an outdated machine because updating any language or operating system is as easy as loading a different disk. With the ///'s generous amount of RAM, there is no reason not to take this more intelligent path to updating your BASIC, UCSD Pascal, DOS, SOS, or what have you.

There is quite a speed difference between a RAM based operating system, and a DISK based operating system. If you have worked with one of the popular portables, and have had to wait for "swapping", then you already know what I mean.

## **Apple II Emulation Mode**

When you use the new Apple II Emula-

tion diskette, none of the advanced features of the /// are functional. Instead of an Apple ///, it is as if you had an Apple II Plus or an Apple II. Your II Plus has 48K, DOS 3.3, Applesoft, Autostart ROM, a disk controller in Slot 6 with 1 or 2 drives, and either an Apple II serial card or an Apple II communications card. The Universal Parallel Interface Card is also fully supported under emulation. While emulating the Apple II, the only changes to the above are that now you are in Integer BASIC with Programmer's Aid #1, instead of Applesoft with Autostart ROM.

Paddles and joysticks are not universally useable under emulation; for example, any program that uses the annunciators at the same time that it reads the joysticks will get erroneous joystick readings. Also, any Apple II program that uses its own routines for paddle-reading routines will not run under the Emulator program.

All programs that require only the II or II Plus as configured above, and which use only keyboard input, will run without any problems on the ///. Most Apple II programs require only the configuration the Apple /// will emulate! However I would like to see the next rewrite of Apple II emulation to include options for a 16K-RAM card (64K needed for Apple Logo),



80 column display, lower case, support of the ProFile, and an option for the Dvorak American Simplified keyboard. Perhaps the best deal would be for Apple to offer a new Apple //e emulation mode. To run Apple II Pascal the emulation mode is not needed, and you still have your super Apple /// with all its power.

### Apple /// Software

Apple has been demonstrating its support of the /// by supplying most of the indispensable software packages a user needs. With the Access/// program and a modem, the Apple /// can communicate with large mainframes, exchange files back and forth, and thus do remote data-processing work for them. Access/// supports ANSI standard escape sequences, and emulation of the DEC VT100 and VT52. Now you really can work from home!

There are several utilities for the Pascal System. One offers a whole library of utilities, and is rightly called Apple /// Pascal Utility Library. Another is called Script ///, and is for formatting any text written with the Apple /// Pascal Editor. The formatted text can then be printed to the screen, saved on disk, or printed out. And for the serious Pascal programmer there is Record Processing Services, which

provides sophisticated file management for development work. Considering all the Pascal aids, and the fact that most of Pascal can exist on the ProFile so that you need only one Pascal diskette, the Apple /// is the best UCSD Pascal development system around.

AppleWriter /// is out and was used to write this article. Among the many features of AppleWriter /// are paragraph and column tabulation, word wrap, split screen operation, the ability to read VisiCalc /// files, global search, file insertion, centering, four kinds of justification, search and replace, printing to the screen, automatic pagination, typeover, etc.

AppleWriter /// even includes a Word Processing Language (WPL) that makes it easy to customize your own applications. Also included is a utility disk for the transfer of files between Apple Writer 1.1, II, ///, Mail List Manager Files, and general conversion between SOS and DOS text files. The most enjoyable feature of Apple Writer for me is the powerful, yet easy to use text formatting menu. Compared to any other word processor that I have used, this is the only one that makes it simple to format something as difficult as a single envelope.

Business graphics are made easy with

a new program called, of course, Apple /// Business Graphics. It uses the DIF file standard so it can communicate with VisiCalc /// as well as Business BASIC, and Apple /// Pascal.

Mail List Manager is yet another program released through Apple for the ///. This one is for creating and maintaining mailing label files, among other things. Quick File /// is a inexpensive data base (file maintenance) program from Apple. And of course, there is a special version of VisiCalc, the Apple program that took business software to new heights, for the Apple ///. But have you heard? There is a new much improved VisiCalc called, VisiCalc Advanced Version, and so far it is just for the Apple ///!

Outside support of the /// continues to increase every day. More and more of the tried and true programs for the Apple II are being updated for the Apple /// all the time. And Apple has the Microsoft CP/M board designed to work with SOS, out and working. Apple has named it SoftCard ///, and in a move to support it, has become the sole distributor. Quite unlike CP/M-86, the CP/M-80 for the Apple /// will allow fairly straightforward conversion of existing CP/M software. Many CP/M programs will only require reformatting for the Apple /// disk drives,



which can also read Apple II CP/M disks. SoftCard /// includes the standard Microsoft BASIC. It also allows CP/M and SOS to exchange files, and the ProFile is fully supported. We have been waiting a long time for this adapter, because Microsoft spent a lot of time interfacing CP/M and SOS. This being accomplished, the wait was well worth it. SOS, however, is such a real advancement over CP/M that, you may just want to stick with it.

### 32-Bit, or 16-Bit, or 8-Bit?

The Apple /// comes with the 8-bit 6502B, which is an improvement on the 6502A, which is an improvement on the 6502, which is an improvement on the 6800, which is an improvement on the first 8-bit chip, the 8008. The 6502B includes an address enhanced instruction set for the 6502. Now there are both bank-switched and enhanced indirect addressing allowing up to 512K RAM. Also, there are separate execution environments for user and SOS, including private zero and stack pages. Even clock speed has been increased to 2-MHz peak, and 1.7-MHz average. This allows the /// to run, on the average, about 40% faster than the Apple II. This makes the 6502B a dream come true for 6502 lovers (Micro magazine take note)!

The speed at which a CPU (central processing unit) computes is a highly overrated comparison factor between personal computers. Being such an easy one to compare on paper, because of being in the numerical values of clock speed and bit-size, it is often used. But in real life, the computational speed of a CPU is like horsepower, a factor to consider if you intend to pull heavy loads like time sharing or your camper.

A substantial problem when comparing just clock speed, is not knowing that one CPU can compute faster than another at the same speed. The 6502, for example, averages four times faster than the 8-bit Z-80 at the same clock speed. Also, a fast processor running a slow BASIC may appear to be slower than a slow processor that is running a fast BASIC. The demands on the CPU by the operating system can vary a great deal.

Matters are further complicated by memory access times, as an 8-bit chip can have much faster access times than a 16-bit chip depending on the memory chips used and other factors. Yet another problem involves the number of bytes used by instructions. A 16-bit chip often requires more bytes than an 8-bit chip for the same operation, and usually needs more memory for the same program. Even 8-bit chips don't use the same

amounts of memory. The 6502 is a more efficient user of memory than the Z-80, which can result in both memory savings and speed improvement. Internal representation of numbers varies from machine to machine, and language to language. The difference in the amount of bytes needed to represent numbers can be substantial in a large program, and can account for some speed differences.

To simplify matters, and to test a complete system's performance, we have benchmark tests. The IEEE is in the progress of developing a standard set of benchmark programs. But, benchmark testing can not take into consideration the tricks or advanced features that a machine may have to speed its processing. For example the Apple /// can run a full 20% faster by merely pressing the CONTROL key and the "5" key on the

numeric keypad at any time (this suspends screen display).

Another problem with benchmark testing is that the tests are usually very small programs that can't begin to use the advantages of features like Business BASIC's invokable modules, which can sharply reduce the amount of code needed. Frankly, I will never rely on benchmark testing until it is done with very large programs, and these would have to utilize the features available to each machine. Standard benchmark programs only test a machine's ability to do things in a very cramped fashion, and if followed too closely would discourage advanced features.

Features like Business BASIC's ability to search for the line number of a GOTO, starting either with its own line number or at the beginning line number of the

## Apple ///

Figure 1:

### Keyboard Friendliness.

- a) Arranged in a *strictly* traditional typewriter layout.
- b) Sculptured, stepped, and angled keys.
- c) Numeric key pad. Recognized differently from main keyboard.
- d) Software definable character set. Can be used for graphics.
- e) All characters used by programming languages.
- f) Dedicated cursor or arrow keys.
- g) Two-key method to boot a disk without powering on and off.
- h) Alpha lock key. Shift locks alphabetical keys only.
- i) The entire ASCII code.
- j) Automatic repeat for all keys and the speed can be tripled.
- k) Can print 224 distinct characters.
- l) Little bumps on D, K, and 5 keys for finger positioning.
- m) Numeric keypad can be redefined into 12 special function keys.
- n) Dvorak American Simplified Keyboard available on file.
- o) 128 byte type ahead buffer.
- p) Many different fonts available on file.
- q) Character set can be changed under program control at any time.
- r) Up to 13 control keys.
- s) Computer "ON" light.
- t) Two system keys. Closed and Open Apple keys redefine others.
- u) 73 keys total.

### Integrated Main Unit (built-in features).

- a) 80 column display.
- b) 143K Disk drive.
- c) Interface for up to 4 disk drives.
- d) RS-232-C. Can be made to serve 6 devices with T-switch.
- e) Color. All 16 colors with 192 lines of 280 dots per line.
- f) Graphics. 16 shades of green with 192 lines of 560 dots per line.
- g) Sound. 64 volume settings and over seven octaves.
- h) Speaker. Of speech producing quality.
- i) Monitor ports. RGB or any video device, NTSC, 80-column monochrome.
- j) Real time clock (location for one on board at coordinates 3-B).
- k) Two Joystick ports, A & B. Silentype printer can share port A.
- l) Diagnostics in ROM.
- m) Audio output. SOS Audio Driver can be rewritten for your needs.
- n) Built-in security mount to prevent theft.
- o) 256K RAM ability, 512K potential without strain.
- q) Four real expansion slots.



program, cannot become significant time-wise in small programs. Most BASICs always start at the very beginning line number even if it is the next line they want.

If a programmer wants to speed up a program there are many techniques available. Perhaps a more important question than benchmark testing is, does the program in question use all the speed advantages of your machine, or even more to the point, does it run fast enough for you?

Most applications for a personal computer just don't require the horsepower of a race car (time-sharing CPU) any more than we require it with our passenger cars. It took a long time for people in the U.S. to realize that unnecessary horsepower was costing them a lot of money, and yet was virtually unusable. Word

processing, for example, is handled 8 bits at a time regardless of the CPU size. To put it simply, eight bit machines have their place and true sixteen bit machines have theirs. Some may find it surprising to learn that super refined 8-bit chips like the 6502B, the 6809, and the 6509 can compute faster than early 16-bit chips.

A bench mark test in *Byte*, January 1982, Page 54, showed the pseudo 8/16-bit IBM-PC to compute only about 20% faster than the 8-bit Apple II on the average. This is consistent with the findings of the benchmark testing for arithmetic processing done by the Association of Computer Users, but they found the Apple II about 50% faster on their accounts receivable test. The Apple /// runs about 40% faster than the Apple II on the average. Most of this speed improvement is not noticeable, however, due to

the fact that the 6502B must also run SOS, which consists of a great deal more code than DOS 3.3 or PC-DOS. With all the extra work we get out of SOS, though, this trade off is well worth it.

When the 32-bit CPU is affordable for the personal computer, there will by then also be storage media that can make use of the 32-bit CPU's capacity for TERAbyte virtual memory (trillions of bytes). Perhaps the read/write video disk with a 32-bit CPU like Intel's IAPX-432 or Motorola's still in progress 120,000 transistor 32-bit CPU, will be the real step into the future. We can then have data bases (collections of related information) and libraries for everything and anything at our fingertips. I have already heard promises of read/write video disks with 100 GIGabytes per side (one hundred billion bytes). There are several 32-bit chips already announced that can directly address 4-GIGabytes of main memory.

If we are going to access and search through such vast amounts of data as third generation storage will permit, then the speed of our CPU will become a crucial consideration. But present storage being floppy disks and Winchester type hard disk drives, the eight bit machines with 256K programmable RAM are challenge enough for a single person to utilize fully. Increases in RAM, Disk storage, and CPU speed are just not significant enough for desk top (personal) computers to have to go to second generation (16-bit) systems. It is also quite likely that 16-bit systems will not be fast enough, or able to address enough memory for efficient use of GIGabyte and TERAbyte appliances. However, time sharing, advanced operating systems, and scientific number crunching applications can use the power of the full 16-bit systems now. With the introduction of third generation memory, storage, and speed, it will be time to update both 8-bit and 16-bit systems. Everything, including applications, will have increased geometrically with third generation capabilities.

Apple's Lisa is the first example of a personal computer that does need the power of a true 16-bit processor. There is no way that a single 8-bit chip or a pseudo 16-bit chip could run all the operating code and graphics that are so necessary to the Lisa. In fact the Lisa is Apple's first departure from von Neumann architecture, as it has another three processors to assist the main processor. Since the Lisa includes in its \$9,995.00 price the integrated six application programs I have read so much about, the 5MEG ProFile, 1.7MEG of diskette storage, and 1MEG of main memory, then only a fool would call it overpriced!

# Features

## Expansion Products Supported.

- a) ProFile 5-MEG super quiet hard disk drive. Can fit under monitor.
- b) Universal parallel port. A T-switch could extend this.
- c) Silentype inexpensive printer can plug in port A.
- d) Qume letter quality printer (plugs into RS-232-C).
- e) Monitor ///, 16 shades of green and full graphics.
- f) Modem eliminator cable comes with /// for use of RS-232-C with printers.
- g) Cursor /// joysticks plug into ports A and B.
- h) Prototyping board for development of new boards.
- i) Apple CP/M adapter made by Microsoft including MBASIC.
- j) Apple's new dot matrix and letter quality printers.
- k) UniFile and DuoFile disk drives providing up to 1.7 MEG.

## REVOLUTIONARY OPERATING SYSTEM.

- a) First ever written to be user friendly.
- b) Data base capabilities. Hierarchical file-structure.
- c) Manages ALL memory locations and I/O.
- d) One disk format for ALL allows file sharing and communication.
- e) Easily updated without hurting existing compatibility.
- f) Ability to rewrite software drivers instead of changing hardware.
- g) Will locate which drive a file is in for you.
- h) Error proof menu system.
- i) Any destruction of data requires confirmation.
- j) Automatic date/time stamping of every file.
- k) Interrupt driven.
- l) Device-independent I/O.
- m) Stores information using all empty space.
- n) Programs that request printing could continue while the printing goes on.
- o) Powerful drivers for graphics, console, audio, printer, and RS-232.
- p) Programs can run 20% faster by pressing Control-5 (no video).
- q) Uses all available memory.

## Apple Languages

- 1) Apple /// UCSD Pascal.
  - a) Works under SOS, thus it has a hierarchical file-structure.
  - b) Will run Apple II Pascal.
  - c) 6502 development system.
  - d) Can communicate directly with SOS.
  - e) 32-bit floating point arithmetic. IEEE proposed standard.
  - f) Enhanced instruction set.



Figure 1 (cont.)

- g) BASIC programs can be edited with the Pascal Editor.
- h) Can be loaded to the Profile and takes up only 175 Kbytes.
- i) Memory limited by size of RAM, not software.
- j) Up to 48 units for any one program.
- k) Can be used to develop UCSD Pascal for any p-code machine.

2) Business BASIC.

- a) Apple's third BASIC.
- b) Up to 19 digit precision.
- c) Console driver allows four direction scrolling.
- d) Memory limitations are based on available memory.
- e) Graphics subroutines are easily called.
- f) Variables of current programs not destroyed by changes.
- g) Code is fully I/O independent.
- h) Turnkey systems need only to use the file name "HELLO".
- i) Arrays of several dimensions.
- j) Integer variables available to speed up BASIC processing.
- k) Can edit programs with AppleWriter ///.
- l) Long Integers can be used for Financial Accounting.
- m) REAL variables have significant digits after 6 rounded.
- n) Floating-point Arithmetic is done with 32-bit precision.

Here are some of the advanced statements available:

- a) PRINT USING and IMAGE statements with aids for output.
- b) IF THEN ELSE for structured programming.
- c) CHAIN to link programs together.
- d) INVOKE and PERFORM make Assembly language routines easy.
- e) WINDOW statement for definition of screen size.
- f) ON KBD statement looks for keyboard input.
- g) TYP statement controls type of data to be read.
- h) INDENT and OUTDENT to make BASIC loops readable.
- i) EXEC simulates keyboard input.
- j) DEF FN statement allows definition of added functions.
- k) SWAP statement swaps values between variables.
- l) FOR...NEXT has the STEP clause available.
- m) POP removes the top pointer from the program stack.
- n) ON ERR is used to handle errors.
- o) RESUME will start execution over at the beginning of the error.

Here are the built-in disk file statements:

- a) REC statement returns current record number.
- b) ON EOF statement controls end of file procedures.
- c) CREATE is used to make directories.
- d) CATALOG to list directories.
- e) DELETE, LOCK, UNLOCK, RENAME, OPEN, and CLOSE for disk files.
- f) OUTPUT #, PRINT #, and PRINT # USING for disk files.
- g) READ #, WRITE #, all for use with files on floppy or Profile.

3) Apple /// COBOL

- a) Rated High Intermediate Level by U.S. GSA.
- b) Higher rating than many minicomputers.
- c) Can run significant mainframe COBOL programs.
- d) Makes use of SOS's advanced features.
- e) Animator provides full view of actual program execution.
- f) FORMS-2 interactively generates screens and source code.
- g) Far more programs exist in COBOL than any other language.
- h) Most English like language to date.
- i) Supports structured programming with the PERFORM statement.

Software Sources:

- a) Apple II software library.
- b) Apple Computer, Inc.
- c) UCSD Pascal software library.
- d) CP/M software library with adapter.
- e) International Apple Core
- f) Apple /// software from everyone.
- g) COBOL software library.

## Conclusion

Apple /// represents the apex of the combination of von Neumann and 8-bit architecture. The main improvement I would make on the /// is to build-in as standard its Universal Parallel Interface, rather than have it take up a slot. But where do you stop adding if you want to keep the initial price within reach, and maintain a small footprint? Some companies have stopped much too soon. The success of the Apple II was and still is, in my opinion, due primarily to its built-in expansion chassis. We could also build in to the Apple /// an interface for the Profile, another RS-232, four more expansion slots, a 6502B for I/O processing, terminal interfaces, or we could just buy a Lisa if we could afford it!

You will never be sorry you purchased the ///, as the software end of it can be updated more easily than any other computer. And there are more programs for Apple computers than any others. Also, Apple has already built so much into it, that you may never need anything else. But if you do, there is plenty of room for the future. Just as it is, the Apple /// is, in my mind, *THE* state-of-the-art professional or networking micro system.

The /// is fully supported by Apple, meaning you can expect new software and hardware releases from Apple all the time. Apple said in *Apple /// Dimensions* that their number one project for the whole company in '82 was the re-release of the Apple ///. We have recently seen new ideas for the ///, such as the "Product Training Paks" that help the novice get started using Apple /// programs, and the interactive program called the "The Keyboard" to teach its use.

Quick File /// is an example of Apple continuing to release new software for the ///. We should soon see the release of the clock chip kit. Even more manuals have been and will be released on the Apple ///. To end all complaints against the low K of the built-in Apple II compatible drive on the ///, Apple has announced the DuoFile (2 drives) and UniFile (1 drive) drives. Each drive holds 850K! And to provide easier back-up of the Profile, Apple has developed and released Back-up ///. This new program makes backing up the ProFile an easy chore, and condenses files to take up less disk space.

What is even more exciting is the new Catalyst program from Quark Engineering. Using this program I can boot all my software from the hard disk. I have finally gotten away from the old "floppy shuffle"!

Well, here I am; an Apple fan once again!





## New! DOUBLE-TAKE

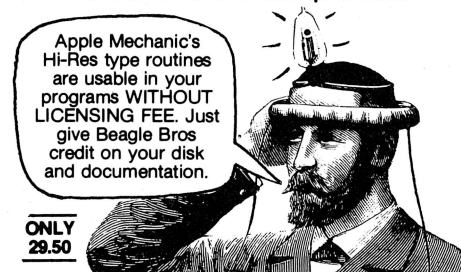
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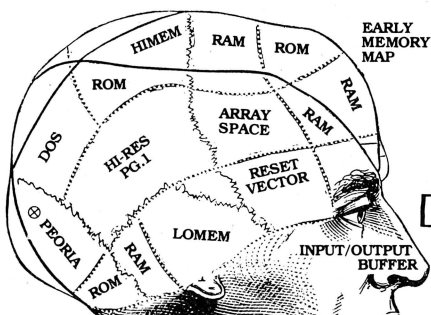
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- 10 A\$="RUQWLU RBOC YNTOOB C@OBD":  
SPEED=180: VTAB 10: PRINT A\$
- 20 FOR X=0 TO LEN(A\$)-1: S=SCRN(X,19):  
COLOR=S+(S-12)-(S-13)-(SCRN(X,18)>10):  
PLOT X,19: NEXT X: GOTO 10

## UTILITY CITY

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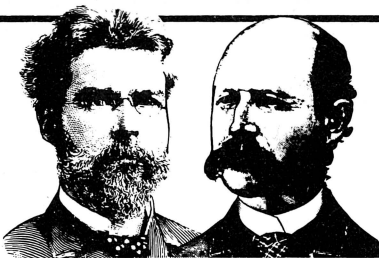
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Function	Normal	Pronto
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SAVE 60-SECTOR PROGRAM	24 sec.	9 sec.
BLOAD LANGUAGE CARD	13 sec.	4 sec.

(TEXT FILES: No Change)

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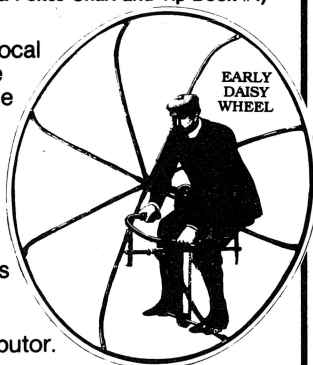
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# Structured Programming

*by Ronald L. Askew*

When a member of a micro user group sits down to write an article for his/her club newsletter, he/she does it for one of a small set of reasons. Some do it to establish themselves as experts on a particular subject. Some will perform the chore out of loyalty to the group and to insure the quality of the club's information function. Others are content to invest their creative writing talents in the hope that someone else might learn something useful from it. I'm writing for none of those reasons. My motivation springs from a groundswell of frustration in trying to take advantage of one of the most important and most highly advertised benefits of user club membership, *i.e.*, access to the club program library.

Whether you are a novice programmer or have been at it for years, I am sure that you have had occasion to dig out one of your old programs hoping to update it with a few embellishments for some particular and important application. Or perhaps you spent hours copying a listing of some promising contributed program from a magazine. It doesn't matter if the program was a game, a print utility or a super file management application, you probably spent too much time trying to figure out how the old program worked before you could modify it at all.

And how about the programs on your club's program disks! Of course, you got the programs for slightly more than the cost of the diskettes, but how often should you be expected to have to shell out your hard earned cash for a disk-full of frustration? And if you think you can take many of those nifty little programs and modify them for some special purpose, you might as well resign yourself and dig in for the near certainty of having to invest hours and hours of work just figuring out how the code works.

This article is written as a plea to BASIC programmers to change their evil ways. I am offering, herewith, some general programming principles to help make your code in the BASIC language easier to read, write, debug, and easier for the author or anyone else to maintain and modify. It is common knowledge that, generally, those who learn to program in BASIC are infamous for their poor coding habits and even poorer documentation techniques, and this includes yours truly. Consider for a moment that the software you spent \$150.00 for might have been written by some one-time hobbyist who, though he/she might be a genius, chose to set the price of the software based on the amount of code and time spent in writing and debugging it. Now consider how unreliable and bug-infested this software might be. This is a serious problem for the whole micro industry. If the problem is not addressed by the hobbyist/user, we might find what some suspect to be already the case, that although micros are convenient and useful tools for home and business, the

majority of software available is unreliable and unnecessarily overpriced.

The principles that follow are borrowed from a number of sources and do not pretend to be an exhaustive approach to structured programming. The general approach is an abbreviated and simplified hybrid of the "Top Down" and "Step Wise Refinement" methods of software development.

Examples are written in Apple /// BUSINESS BASIC because of obviously superior built-in software devices that contribute and encourage structured programming. Most of the principles can be generalized and applied to any extended BASIC (including Apple II Integer and Applesoft) and all apply, ultimately, to most languages that are not self-documenting and that do not demand structure.

## Structure Outline

When you sit down to write, the first thing you should do is to outline the major functional parts of the program. Identify a range of linenumbers for the code and mark them with REM statements. Make sure you have allowed room for short utility routines that might be called often by the other modules. Principles that should be kept in mind are as follows:

- Short subroutines that are accessed often should be placed at or near the beginning of the program. This enhances execution speed because GOSUBs and GOTOs, in interpretive BASICs, tend to search from the beginning of the code for the destination linenumbers. Speed is also enhanced because the program is shorter due to the non-redundance of frequently executed code. Each subroutine should list the parameters it must receive. The major advantage of this approach, even in cases where speed and brevity are not considered important, is that your subroutines are all labeled and in one place so they can be easily found when you want to debug or modify them.
- Try to anticipate what subroutines you might require. Certain common routines should be in a library somewhere so that you can renumber them and EXEC them into the project at hand. Common routines might be for text centering, numeric input routines with string to numeric conversion, generalized menus, graphics initialization, 'hit any key to continue', output formatting, etc . .
- Longer routines, especially if not accessed very often, should be positioned at the end of the program.
- Modules should be generalized, that is, if you have one routine that accepts numeric input and another that has a numeric entry routine incorporated in it, you have been



redundant. It would be better to write one generalized routine than to have several versions of it.

- The initialization section is usually executed only once and should be located at the very end of the program. This includes all DATA, DIM, DEF FN and IMAGE statements, and control character and other variable constant initializations. Should your program involve chaining or EXEC overlays, divide your initialization module into two or more submodules. By doing this, you can CLEAR unneeded overhead and only the necessary variable baggage is available to the chained program.

Listing 1 is an example of a skeleton structure.

### Control Logic

Now you can actually write the code for your "main control logic". If the program is complex then you might want to perform Step 1 to subdivide and outline the major modules of your main control logic section. The main control logic may be organized by menu options and their branches. There may also be internally controlled options and branches dictated by calculations, the value of key variables, or any other program branching criteria.

Listing 2 is an example of a simple main control logic module. Note how the program fills in as you determine what constant, variable, and subroutines are needed. The dummy PRINT statement for the 'add' routine demonstrates how the menu module can be tested even though the subroutine it calls is not yet written.

### Subroutines

You should incorporate subroutines into the program on an 'as needed basis', testing each from immediate execution mode with GOSUBs to ensure the operating integrity of your software.

- The special and temporary variables should be given names that will not conflict with the other program variables and that can be used by other subroutines that it neither call or that call it. Suggested variable names are:

```
TMP$(TMP.INDEX),  
STRG$(TMP.INDEX),  
TMP.STRG$(TMP.INDEX),etc.
```

- Always qualify FOR..NEXT loops in subroutines that may be called from within another FOR..NEXT loop. A qualified FOR..NEXT loop has the control variable identified in the NEXT part of the construct. For Example:

```
100 NEXT J      is qualified,  
100 NEXT      is not qualified.
```

### Write Code

Now you can write and hook each major functional module using Steps 1 to 3, in turn, until the program is complete. First outlining, then writing the code and adding subroutines. The subsequent examples provide sequenced snapshot views of the development of the program following these principles.

- Each module should be tested before moving on to the next one. If the module has been designed as has been suggested, this can be done from the keyboard in immediate mode by typing GOSUB (linenumber). This approach reduces the complexity of debugging a large hunk of code at one time and it serves to isolate the type

of logic errors that are most difficult to find. Often you will have to initialize, from the keyboard, some dummy data that the module needs before GOSUBing.

- As the coding progresses and new ideas impose on the structure and/or the scope of the project, it is often necessary to reevaluate the existing structure. This activity is much simplified when the above principles have been adopted.

### Readability

Your programs will be fairly readable just through the application of the structuring techniques described above. Here are some additional tricks to make it even more readable.

- Offset your REM statement from the other program lines by embedding control characters. There are exotic ways of doing this but here is the simplest technique (the character in brackets is a control character):

```
100 REM[J]***turn on thermostat***[J]
```

This will cause the line to be separated from the lines above and below it and might look like this:

```
90 IF temperature {= freezing THEN 200  
95 RETURN  
100 REM  
        ***turn on thermostat***
```

```
105 GOSUB 60000 : GOSUB 61000  
110 ON ERR GOTO 62000
```

- Variable names should give the reader a good idea what the value of a variable is. To this end, it is a good idea to adopt certain naming conventions. Temporary variables should be named as we discussed above. Control characters should be given names like a\$, b\$ or ctrl.a\$, ctrl.b\$; and these should be declared in an initialization section. Other variable names should be descriptive as follows:

```
6300 freezing = 32: boiling = 120: screenlength% = 24:  
first.name$ = "Sam": last.name$ = "Jones": int.max% =  
32767
```

If, for the sake of speed, it is necessary to shorten variable names or to eliminate REM statements, it is best to publish the slow documented version with the advice to users that they should use appropriate REM removal and text editor utility programs for that purpose.

### Flow of Control Constructs

I have also included a listing of skeleton routines that may be of assistance to BASIC programmers adapting routines from an algorithmic language or from other languages that incorporate some of the more common "flow of control" constructs. They may be used to help in direct translations from such a language or by the ambitious BASIC programmer who wishes to simplify program logic and branching techniques. It is assumed that readers need not be briefed on the use of the FOR..NEXT, GOTO, GOSUB..RETURN, and IF..THEN..ELSE constructs.

#### 1. WHILE

This construct will evaluate a logical expression prior to the execution of the following block of code. This means that it will



```

1 GOSUB 62600:GOSUB 62700

9 REM short subroutines

38 REM setup protected field
39 REM fld.len% := length of field, horz%,vert% := coordinates

58 REM input integer
59 REM parameters not yet determined

2998 REM add 2 numbers
2999 REM operand1% := 1st operand, operand2% := 2d operand

3998 REM subtract 2 numbers
3999 REM operand1% := 1st operand, operand2% := 2d operand

59999 REM menu - control module
62599 REM constant initialization
62699 REM variable initialization
63901 REM *****
63910 REM * Program to perform calculations *
63910 REM * on pairs of integers *
63930 REM * Copyright (C) 1982 *
63940 REM * by Ronald L. Askew *
63941 REM *****

```

### Listing 1

only execute the block that follows if the logical expression is true or since BASIC does not have a Boolean data type, if the numerical value of the expression is not zero. If the expression evaluates as false (or zero), the block of code will be ignored.

Applications of this construct are common to many programming problems. Suppose you want to continue to allow user input and processing only if the user responds with alphanumeric characters, as in an input routine. Or suppose you want to continue processing all values but you only want to print results while they are non-negative. Finally, suppose you want to read from a file "while" the file still has data in it.

## 2. REPEAT

This construct is the functional opposite of WHILE. The block of code will execute at least once and repeat only if a condition evaluates as true or non-zero. As with the WHILE construct, if the expression is always true, an infinite loop results.

Applications include the reading of a random file that is known to exist and has as its first record data describing the number of pointers to subsequent records (linked lists). If the condition tested was whether or not the next record in the list has a null pointer, execution will continue until a record is read that has such a pointer, but it will read at least one record (the header record) before the loop terminates.

## 3. CASE

The CASE construct is most useful as an alternative to a long list of IF statements testing for some specific condition. An expression is compared to a list of selectors of the same data type. Each selector is associated with a statement or block of statements to be executed. The first matching selector determines the code to be executed. If none of the selectors matches the expression, no statements are selected or executed.

One special application may provide the best example: a menu where the legal options are selected by the entry of a letter from "A" to "G" (in upper or lower case) or the control characters produced by pressing the «RETURN», and the «ESCAPE» keys.

## In Conclusion:

It would be encouraging if user groups imposed some standards upon the software they accept into their libraries. I am sure that most, if not all, disk librarians and newsletter editors are down-in-the-mouth about the problems of having to respond to members who have, in turn, responded negatively to the quality of important organizational software materials. If a computer club is not willing to impose standards, it becomes the responsibility of the contributors to make the best contribution they can or we're all in trouble.

```

1 GOSUB 62600:GOSUB 62700

9 REM short subroutines

38 REM setup protected field
39 REM fld.len% := length of field, horz%,vert% := coordinates

58 REM input integer
59 REM parameter not determined

2998 REM add 2 numbers
2999 REM operand1% := 1st operand, operand2% := 2d operand

3998 REM subtract 2 numbers
3999 REM operand1% := 1st operand, operand2% := 2d operand

59999 REM menu - control module
60000 TEXT HOME:VPOS=4:PRINT USING 63600; titles$
60001 REM *****
60002 REM 1 Addition
60003 REM
60004 REM 2 Subtraction

```

### Listing 2



(Listing 2 cont.)

```
60005 REM
60006 REM ~~~~~
60007 REM Enter Selection
60010 WINDOW 20,8 to 24,80: REM set viewport for options
60020 PRINT screenoff: INDENT = 0: LIST 60001 TO 60009
60030 WINDOW 1,8 TO 29,24: HOME: PRINT screen on$: REM erase linenumbers
60040 GET respond$: IF NOT INSTR(menu.opts$,respond$) THEN 60040
60050 ON INSTR(menu.opts$,respond$) GOSUB 3000,4000: GOTO 60000

62599 REM constant initialization
63600 IMAGE 78c
63610 titles="Program to perform calculations": screenoff$=chr$(14): screen on$=chr$(15)

62699 REM variable initialization
63000 menu.opts$="12"
63901 REM *****
63910 REM * Program to perform calculations *
63910 REM * on pairs of integers *
63930 REM * Copyright (C) 1982 *
63940 REM * by Ronald L. Askew *
63941 REM *****

100 REM *****
103 REM **
105 REM ** Structured Business Basic - **
110 REM ** A set of Subroutine Skeletons **
115 REM ** by **
120 REM ** **
125 REM ** Ronald L. Askew **
130 REM ** **
140 REM *****

200 REM *****
205 REM **
206 REM ** Emulation of the While Statement **
207 REM ** **
208 REM *****

210 IF condition%=testvalue% THEN operation1=executed::ELSE GOTO 250
220 operation2=executed
230 operation3=executed
240 etc...=executed
245 GOTO 210
250 REM continue sequential processing

300 REM *****
305 REM **
306 REM ** Emulation of the Repeat Statement **
307 REM ** **
308 REM *****

309 true=1: false=0
310 FOR test=false TO true
315 operation1=executed
320 operation2=executed
330 operation3=executed
340 etc...=executed
345 test=(condition%=testvalue%)
350 NEXT test
360 REM continue sequential processing

400 REM *****
405 REM **
406 REM ** Emulation of the Case Statement **
407 REM ** **
408 REM *****

409 escapekey$=CHR$(27): returnkey$=CHR$(13)
410 acceptable.chars$="ABCDEFGHabcdefgh" + escapekey$ + returnkey$
420 GET respond.char$: IF NOT INSTR(acceptable.chars$,respond.char$) THEN 420
430 ON INSTR(acceptable.chars$,respond.char$) GOSUB 500,510,520,530,540,550,560,500,510,520,530,540,550,560,600,610
450 REM continue sequential processing
```



# WordStar

*Review by Woody Liswood*

Published by:

MicroPro International Corporation  
33 San Pablo Avenue  
San Rafael, Ca. 94903  
(415) 499 - 1200

Want a quick opinion? WordStar is the best word processor available for the Apple. That is if you don't need real proportional printing. If you do, then you should check out SpellBinder. But SpellBinder is not a what-you-see-is-what-you-get screen image like WordStar. So, you should really think about what you want, and then try out both of those programs. I personally like WordStar for my own use.

There is one problem though: WordStar is a CP/M based program. Therefore, you need to purchase a CP/M card of some sort as well as an 80-column card. If you do lots of writing, you'll be glad you did.

WordStar is a what-you-see-is-what-you-get word processor. The screen shows you exactly what will appear on your paper. To me, that's what word processing is all about.

WordStar is not the easiest program you will ever have to learn. Since the program can do so much, and offers you so much flexibility, you have to learn how to use all of the features.

## Documentation

The documentation which comes with WordStar is so complete it gets in the way. It is designed to document the program, not to teach you how to use it. I have used WordStar for a long time now, and I still discover new things it can do when I page through the manual. What happens is that I get a need, look in the documentation, then discover that it not only does what I want, it does a few more things as well.

## Operation

The operation is quite simple, or quite complicated. It all depends on your point-of-view. I go for the simple. The program is controlled by Control key sequences. To me they make sense.

Cursor movement is all with the left hand; Control-S moves to the left; Control-D moves to the right; Control-E moves up and Control-X moves down. So far, so good. Control-A moves left one word; Control-F moves right one word. Now some complications; Control-QS moves to the left end of the line; Control-QD moves to the right side of the line; Control-QE moves to the top of the screen; Control-QX moves to the bottom of the screen; Control-QR moves to the start of the file and Control-QC moves to the end of the file; Control-Q plus a number will move to those marks if you have set them.

Control-Y deletes the line the cursor is on; Control-T deletes the word to the right; Control-G deletes the character the cursor is on; Control-QY deletes to the right side of the line; Control-Q (left arrow) deletes to the left side of line. A left arrow deletes a character it goes over.

I have heard some criticism of WordStar because of these one and two control character sequences. I have also heard criticism that WordStar, on the Apple, doesn't have the special function keys that are available on other CP/M based machines. Rubbish. Having all those keys available under your left hand means you can do all your text manipulation and cursor movement without moving your hand from the keyboard or



without having to take your eyes away from the screen to figure out what to do. That makes the program very easy to use. I've tried the function keys and personally feel that they get in the way. Actually, if function keys were available I would use them for strings of commands (macro's if you will), not for single movement commands. I would have one key save the current file and return the cursor back to the current location. Oh well, maybe some day.

### Screens

WordStar contains a series of help screens. These screens contain many of the control command sequences which you can use to cause things to happen. After you gain some familiarity with the program, you can turn the screens off. A very nice feature.

### No-File

The first screen which appears is the NO-FILE menu. It is called "no file" because you do not have a file in memory to be worked upon. From this menu you can change the logged drive, allow your file directory to be displayed or not, and set your help level. This determines the amount, if any, of information that the help screens will show.

From here you can also print a file, rename a file, copy a file from one name to another or from one disk to another, and you can delete a file.

Also available are an exit back to CP/M or a Run a program option, which would return you to WordStar when it ends. There is also a command to run MailMerge or Spellstar.

WordStar also works with two types of files. You can edit normal word processing files. These files will contain lots of special characters which the program uses for its formatting. You can also edit a normal CP/M text file and have no special formatting characters put into the file.

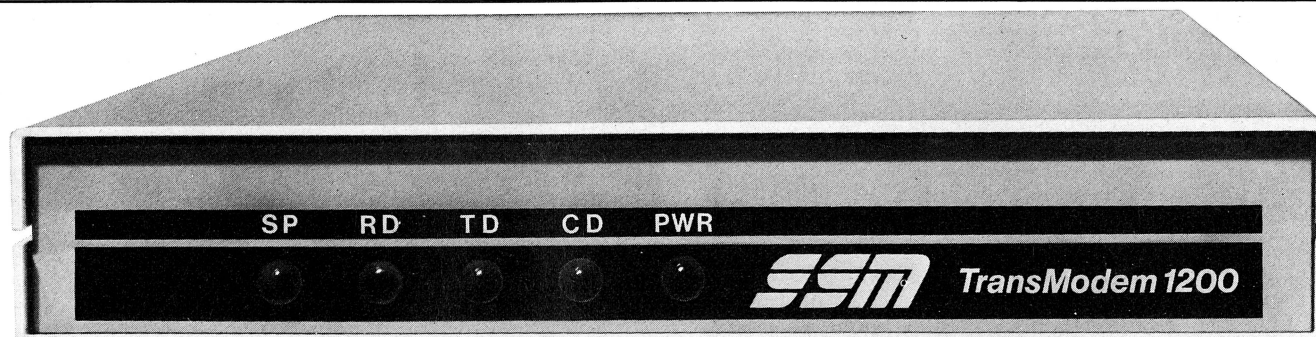
### Main Menu

If you have selected a help level of 3, then all of the help menu's will appear when requested. First to appear is the MAIN MENU. This menu shows you the control sequences which move the cursor around and cause the screen to scroll. You don't have to memorize all those things I was talking about. They are displayed at the top of the screen for you to read. Also displayed are some Miscellaneous commands for tabbing, reforming paragraphs, turning insert on and off, the find and replace and how to stop a command once you have given it.

For example, Control-B reforms a paragraph. WordStar, while you are entering data, automatically word wraps and right and left justifies the text. However, you will probably want to go back and add or subtract characters. When you do that the right justification is lost. When you are finished with the editing, you move the cursor back to the line where you started your editing and press a Control-B. The paragraph then is justified and things can continue. That's how easy it is. Oh, yes, you can turn off the justification feature if you wish.

WordStar allows you to insert or write over your file. It is your choice. I always leave the insert on.

The other thing shown on the menu is the control sequences to get to the other menus. Remember that there are many two character control sequences. Each of the first character's has



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their own screen to show you what the second character is and what that character does. Control J gives you a Help menu. Control Q shows you what is called a Quick menu. Control O controls the Onscreen menu. Control K is the Block menu, and Control P shows you special characters which will affect your printing.

## Help

The Help menu gives you text information about the help levels, how the reform command works, what the special symbols mean that are shown at the right side of the screen, and what each of the "dot" commands do. In addition, it has text information about the status line, the ruler line, how to set margins and tabs, how to place markers and how to move text.

## Quick

The Quick menu shows you many of the commands that are accessed by first typing a Control-Q; Control-QS moves the cursor to the left end of the line; Control-QF starts a string or character find sequence; L finds a misspelled word marked with SpellStar; and Q plus something else repeats that indefinitely or until the end of the file is reached.

## Block

The Block menu is reached by first typing a Control-K. This shows you the characters for setting, moving, and working with blocks of information. After a Control-K, S saves the file onto the disk and let's you continue working. D saves the file and places you at the no-file menu; X saves the file and places you in CP/M; Q abandons the work; 1 to 9 places those markers; B marks the beginning of a block of text for a block move; K marks the end of a block for a block move; and H hides or displays a marked block. That deserves an explanation.

If you use a Videx board with an Inverse chip, then the menus and special functions are all shown in inverse characters. When you mark a block of text, all of that text turns into inverse characters. This feature makes it very easy to see what you are doing. Well, when you are done, you would use the H to turn off the inverse characters so that you can see the text normally. C lets you copy blocks of text; V lets you move blocks of text; Y deletes text; W writes the text elsewhere; and N sets column mode on or off. Also, R allows you to read a file on the disk and place it in your document. O copies a file on to the disk; J deletes from the disk; P prints and an E renames.

As you can see, you can do your disk file operations and start printing some other file all while you are editing a current file. That is a very handy feature.

Yes, WordStar allows print spooling. You can be editing one file while you are printing another.

## Onscreen

The Onscreen menu controls much of the visible activities of WordStar. It is reached with a Control-O. After the Control-O, L sets the left margin; R sets the right margins, X releases the margins; I sets and N clears tabs. G sets paragraph tabs and F sets the ruler to the cursor position. C centers the text and S sets the line spacing mode. In WordStar, if you want double spacing and you cannot set that on your printer, you must have double spacing on the screen.

There are also a number of toggles at this menu. W toggles word wrap; T turns on or off the ruler line; J is for justification; V is for variable tabs; H is for hyphen help; E is for a soft hyphen; D is for the printer display, and P is for page breaks. Now to explain.

Word wrap only lets full words exist at the end of a line. Incomplete words, are wrapped down to the next line. If you don't want spacing between words, you would toggle the word wrap off and let WordStar act like a typewriter page. There is a ruler line normally displayed at the top of the screen. It shows where the tabs are and what the margins are set at. If you want to display an additional line of text and don't feel you need to see those things, you can set it off.

Hyphen help is a useful WordStar feature. If you leave hyphen help on, then when you form paragraphs, rather than wrap longer words found at the end of the line down to the next line, WordStar will stop at the word and allow you to insert a soft hyphen in it. That way, your printed material will look better with less spaces between words on any given line. Soft hyphen, you ask? WordStar has hard and soft hyphens. Hard hyphens always print. Soft hyphens only print when they are found at the end of a line. If you toggle soft hyphen on, then all your hyphens will be soft. Sound Confusing? It really isn't. The Word Plus, a spelling program, actually will go through a WordStar document and insert soft hyphens in all words of a certain character length or longer. Page breaks are dotted lines which show on screen where the page will break when printed. This allows you to visualize how the material will look before you take the time to print it. I use that display all the time. When a page will break where I don't want it to, I use a dot command to force a page break where I would like it to appear. The printer toggle hides special printer control characters so that your screen will show, exactly, what will appear on paper. If it is off, special printer control characters will appear where you inserted them. I leave it off so that I will know what is going on.

## Print

The Print menu is reached with a Control-P. This menu allows you to insert printer control characters in the text. B turns on bold face; D turns on double strike; S underlines; X strikes out the text; V subscripts; T superscripts; H overprints the characters; A changes to an alternate pitch, N returns to standard pitch, C allows for a pause during printing, Y changes ribbon color, and there are four user defined characters, Q W E R, which will do what ever you set up during your WordStar installation. Of course, your printer must be able to support all these features.

## DOT Commands

Dot commands are commands which are preceded by a period "." with the period located on the far left end of a line. They are used by many word processors. With these commands, you can override the WordStar defaults. The following are some of the commands: LH sets line height; CW sets character width; PL sets paper length; PO sets the page offset from the left edge of your paper; MT sets the top margin; HE sets a heading; MB sets the bottom margin; FM sets the footing margin; FO sets the footing; PC sets the page number column; PA starts a new page; CP starts a new page if there is a specified number of lines left to be printed; OP omits page numbers; PN starts page numbering; IG or two dots allows you to insert nonprinting comments, and VJ toggles justification.

## Summary

As you can see, WordStar can do almost anything you want it to do. Many people call it the Cadillac of word processors. I agree. If you do lots of writing, you need WordStar. Don't settle for second best.



## Mailmerge

MailMerge is WordStar's option for form letter development. It allows you to produce form letters, to insert variable data into a document during printing, to insert other complete files during printing, to print multiple copies of a single document, and to build command files for automating complicated processing operations.

MailMerge is accessed from the WordStar no-file menu by keying M.

That, however, is not the way it's used. You must first create, with WordStar, a file which contains special dot commands and other special commands which, when processed by MailMerge, allow all those special things to happen.

Following is the first section of a letter which I use. It shows just how one feature of MailMerge works.

.. Source product review notification letter

```
.OP
.CS
.AV "          TODAY'S DATE?",DATE
.AV "          COMPANY NAME?",COMPANY
.AV "          ADDRESS?",ADDR1
.AV "          CITY STATE ZIP?",ADDR2
.AV "          SOFTWARE NAME?",NAME
.AV "          CONTACT NAME?",CNAME
                WOODY LISWOOD
                110 Upland Drive
                San Francisco, CA 94127
                (415) 585-6375
```

&DATE&

```
&COMPANY&
&ADDR1&
&ADDR2&
```

Dear &CNAME&:

Thank you for participating in our review program. This review may appear in a variety of separate media. We plan on publishing this review in the Cider Press, the nation-wide magazine of the San Francisco Apple Core. Also, I now publish a software and hardware review magazine on both The Source and CompuServe. As space permits, I will be publishing selected reviews on The Source and on CompuServe. Additionally, certain reviews will also appear in The Apple Orchard, a 30,000+ publication of the International Apple Core.

I have enclosed a copy of the article about &name& that is written to go on-line. If you wish to reply, I will be happy to add your reply as a comment section to the review. In addition, we plan to publish this article in the next scheduled issue of the Cider Press. The article for the Cider Press may be slightly different since we will add illustrations and other graphics that we cannot utilize on The Source.

The .AV'S tell MailMerge to ask me for those variable names. Then, when it sees a &name& within the text, it places the appropriate variable name within the text, and justifies it accordingly. It looks like an originally typed letter. How about that.

MailMerge works with CP/M data files also. It works the same way with some small exceptions. Instead of .av's, you first tell MailMerge the names, in sequence, which will be found between carriage returns in the data file. Then you use those names within the &.....&'s. MailMerge will go through and place the appropriate data into the letter.

You can create the data files with WordStar using the Non-Document mode, or if you can use DataStar, MicroPro's data entry and retrieval program, to create the files.

There is a ".DM" command for use also. This displays a message on the screen while MailMerge is going about it's work. You can say, now put the letter head stationary in the printer and press "P". Then display a request to now put the envelope in the printer...

A very powerful and flexible program.

Another Dot command of great use is the ".FI". This stands for insert a file. Whenever MailMerge reads this command and the file name next to it, it will then add that file to the text which is being printed. This way you can create a large boiler plate document by only keying in a series of commands. If you need paragraphs a, b, d, g, aa, zz, c, then qq. You would set up the MailMerge file with a series of ".FI A, .FI B". etc.

You can also span multiple disks using the ".FI" commands. You would set up the same way, but follow the ".FI B" with a "CHANGE". This tells the operator to change disks and will cause MailMerge to warm-boot the new disk without causing a BDOS error in CP/M. Why, you ask, would a document or documents to be printed as one printing be so large as to be spread over more than one disk? Perhaps each disk contains one chapter of a book. The MailMerge file would basically say print chapter one, change disk, print chapter two, change disk, and so forth. A useful feature for writers.

Another feature is the repeat printing feature. This tells the file to be repeated until a specified action has ended, a data file is used up, or a selected number of documents have been printed.

You can see that it is possible to build a command file with just dot commands, which would invoke a series of MailMerge documents, each of which might use a separate data file for processing. With continuous feed paper, you can come in, select one command file, and hope your ribbon holds out.

## Summary

Mailmerge is a necessary and useful addition to the MicroPro - WordStar product line. If you do word processing, you really need the features found in MailMerge. It does much more than just Form Letters. Once you have become used to the command file structure and learned the extra dot commands used for MailMerge, you will find many uses for it.

## Spellstar

SpellStar is the MicroPro spelling program which works only with WordStar. It is run by keying in a S from the WordStar No-File menu.

SpellStar comes with a basic dictionary of about 20,000 words. On the Apple, which was the version which I tested, that takes most of one disk.

The program works very well. I have used it with many files without problems. Over the past few months I have used, and



reviewed a number of spelling check programs. Each has its good points and its bad points.

The best feature of SpellStar is that it is designed to run within WordStar. Here's how.

After you select the SpellStar menu option within WordStar, you are asked the name of the file you want to check or to add to the dictionary. If you are doing a spelling check on the file you just worked on with WordStar, you key a Control-R and a return. Otherwise, you must type in the name of the file.

Next, you come to an operations menu. You choose C to check spelling, M to go to dictionary maintenance, or X to return to the no-file menu.

## Spelling Check

You are then given the option to change the spelling check controls. If you use a hard-disk, this is usually unnecessary. If you are using 5 1/4 inch floppies, then you will need to tell SpellStar which drive contains the file to be checked and which drive has the dictionary. You can, at this point, indicate which drive contains the main dictionary, or change the default name of the main dictionary to the dictionary name to be used. You may also add a supplemental dictionary name to be used. And, you can designate a work drive to hold the subsidiary files which SpellStar generates while it processes your textfile.

What you have to worry about with small disks is that the dictionary takes about 100k. SpellStar generates work files that are equal in size to your text file. If you are checking large files, it is possible for you to run out of space. When that happens with CP/M, you bomb.

## The Spelling Check

While the spelling check is going on, SpellStar displays a screen which tells you where it is and what it is doing.

First, you are told how many words are in your document.

Then, the number of different words are displayed.

Next is the number of words in your main dictionary along with the number of words in the supplemental dictionary.

Then, WordStar keeps track of where it is in the main dictionary and updates the number of dictionary words checked. This is a nice feature for it tells you what is happening. You don't just sit there staring at the screen waiting for a cursor to return and wondering if things have bombed and you should reset out and start over again.

When this is done, Spellstar gives you the number of misspelled words and the total number of occurrences of those misspelled words.

At this point you can display the misspelled words on the screen, start over, return to the WordStar menu, or mark the words as misspelled in the file and continue with the program.

## Correcting Your Spelling Errors

SpellStar uses WordStar to fix the errors. Each of the words is marked with a special character. You use a Control-L to go from word to word. You must make the decisions yourself. There is actually a menu of items that you can choose from. When the cursor stops at a potential misspelling, F lets you fix the word; B allows you to bypass the word leaving it marked; an I ignores the word; D says the word is correct and will place it into an ADD file to be added to the dictionary during a maintenance operation, and S adds it to the supplemental dictionary rather than the main dictionary.

SpellStar has a small buffer of about a 20 word capacity. If you instruct the program to ignore a word or say that a word is correctly spelled, it will automatically remove the spelling marks and pass over future occurrences of that word. That's a nice feature.

Works smoothly. No problems. However, this is the one area where I feel the program should be improved. SpellStar has no feature to check the dictionary for suggested correct spelling and to read a correctly spelled word out of the dictionary and correct the file. Modern technology for spelling programs should have that feature.

## Dictionary Maintenance

After you complete your spelling checking, and have indicated that there were correctly spelled words in the file, you have the option to add those words to either a supplemental dictionary or to the main dictionary. WordStar has placed those words in a file with the extension .ADD. You would go back to the SpellStar prompt and this time choose the dictionary maintenance option.

The dictionary maintenance menu presents itself in a similar way as the spelling checking menu. You have the opportunity to indicate what drive contains what file. The main dictionary is 100k long. You will need a blank, formatted disk to hold the new dictionary since both will not fit on the same disk.

You also have menu items to create a new dictionary, add words, delete words, list dictionary words, combine add/delete functions or to only use the "S" words from the .ADD file.

When you combine add/delete this is what happens. Words which are in the ADD file but not in the dictionary are added to the dictionary. Words which are in the add file and in the dictionary are deleted from the dictionary. Actually SpellStar stops at each of the words to be deleted and informs you that this word is already in the dictionary and asks that you confirm that you really want to delete that word. Neat. That's how you get a misspelling out of the dictionary.

Dictionary maintenance takes a few moments, but not excessively so. It works well. Other spelling programs have the maintenance program as an automatic function after checking spelling. I kind of like this way. It gives me lots of control over the process and allows me enough options to set up things the way I want.

## Summary

This is a well organized and constructed spelling checking program and dictionary maintenance operation. It is designed, specifically, to work with WordStar and takes advantage of the WordStar editing features for spelling correction. It works, is relatively easy to use, and like all MicroPro programs appears to have been designed as a solution to a problem rather than as an afterthought to a separate program.

However, in my opinion, there are now better spelling programs on the market. You owe it to yourself to look at "THE WORD PLUS" before you make a decision about Spellstar. The difference is that "THE WORD PLUS" in addition to the spelling checking, gives you suggested spellings for words that it doesn't recognize, then will place those words in the file for you when it is done. That way you do not have to mark a word as misspelled and come back to it with a text editor and try to remember how to fix it.

If you get SpellStar as part of a package, then I think that you probably will use it and be very happy with it. If you must purchase a program, I think that you would like some other programs better.





# Reversal

*Review by Eugene M. Paymar*

Published by:  
HAYDEN PUBLISHING CO.  
50 Essex St  
Rochelle Park, NJ 07662

Available through B. Dalton Bookstores  
Price: \$34.95 (approximately)

All right! I have to confess. I love playing strategy games against the computer, but I hate sitting around waiting for the computer to make its move. At 15 seconds I start to get antsy; at 45 seconds I begin to think of rubbing my feet on the carpet and hurling bolts of static lightning into the guts of my poor Apple. Of course, I'm allowed all the time that I need, but that's a different story.

Under the above restraints, I have always had a difficult time finding a good quality game to play. *Sargon II* came closest; I could always beat it, but only by paying very close attention. The game known variously as *Othello/Reversi/Reversal* has always been a particular source of disappointment to me. I learned the game in Nikko, Japan one memorable evening four years ago, and have been enthused about it ever since. However, finding a good computer opponent is something like pursuing the Holy Grail. I've played two versions on the Heath H-8, at least two more on the Apple, and the Atari game computer version. Frankly, the only real challenge lay in trying to zero the poor computers.

Then a friend invited me over to see the new "great" *Reversal* game that he had just bought. I noted with interest that the authors were Dan and Kathe Spracklen, the authors of *Sargon II*. However, with my previous experience in mind I set the top level of play, A9 (Advanced Strategy, level 9). The program's cursor blinked interminably. At 40 seconds my friend hastily saved both his computer and our friendship by restarting the program at level A3 which produced a computer response a few seconds after each of my moves.

Now, one does not have to play this type of game long to realize that you are relatively safest on the sides and permanently safe in the corners. Thus it seems reasonable to strive to achieve positions on the sides of the board and later spread into the corners; and conversely, try to keep your opponent from doing likewise. Much to my astonishment, after only a few moves the computer freely offered a jump onto the side of the board. Muttering a few choice scathing comments about both the program's capability and my friend's judgment, I gleefully accepted this and several future "gifts". Approaching the end of the game, I had a forty point lead. Then I discovered that I was forced to give the computer a corner . . . and then another one! When the dust cleared I had *lost* by forty points!

I asked to borrow the game for future study. My friend graciously granted my request (after all, I'm a heck of a guy . . . also, I have spent 15 years in the martial arts). Several evenings and a number of heartbreaking last-move losses later, I had finally found enough patterns to play the machine even at A3 and win some at A4. Folks, this program is tough!

And not merely tough. The Spracklens have done their usual fine job of human interfacing. Not surprisingly, they have used *Sargon II* as a model with very similar menu and control features. The main menu has four options: play the computer; play a human opponent; board "editor"; and exit.

If you wish to play the computer, screen prompts let you choose the computer's strategy (beginner, intermediate, advanced) and level (1-9) as well as select your own color. Once the game begins, the «ESCAPE» key lets you toggle back and forth between a text screen which records the moves and a delightful Hi-Res display of the board. All of the pieces have faces which appropriately change expression as the tide of battle ebbs to and fro. When the computer makes its move it puts its flashing piece on the screen, but in another nice touch, it does not change over the pieces until you hit «RETURN». This allows you ample time to analyze its move. When it's your turn, you may move a flashing cursor from one legal move to the next via a key stroke from the keyboard, finally pushing «RETURN» to enter the move.

If you choose to play a fellow human, the computer simply acts as the umpire. It will only allow legal moves, and it takes care of changing the captured pieces.

The edit mode is another nice feature. You can get there either from the initial menu or from the middle of a game by typing Control-R. (Warning: Be sure to toggle back to the text screen first, or you will likely be lost in never-never land.) This mode is useful in setting up problems or in recovering from accidentally hitting «RETURN» during a game and thus making the wrong move (of course, you would never cheat and try to recover from an inferior move). The "+" and "-" keys move the cursor up and down the board, respectively while the left and right arrows do their own things, also. Typing "W" or "B" at the cursor location will place the appropriately colored piece there. The space bar erases whatever is at that location. Finally, «RETURN» terminates the edit mode and brings back the main menu from which you can re-enter one of the game modes and continue with the now modified position.

The exit mode leaves you in the System Monitor. It would have been a little nicer to be back in DOS, but typing "3D0G" gets you back to what acts like a freshly booted DOS.

In summary, *Reversal* is an excellent program, good for many hours of challenging intellectual play. I may not have found the Grail yet, but this program is a real treasure.



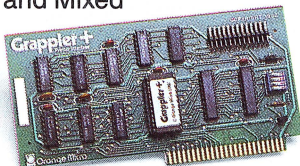


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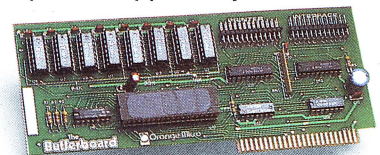
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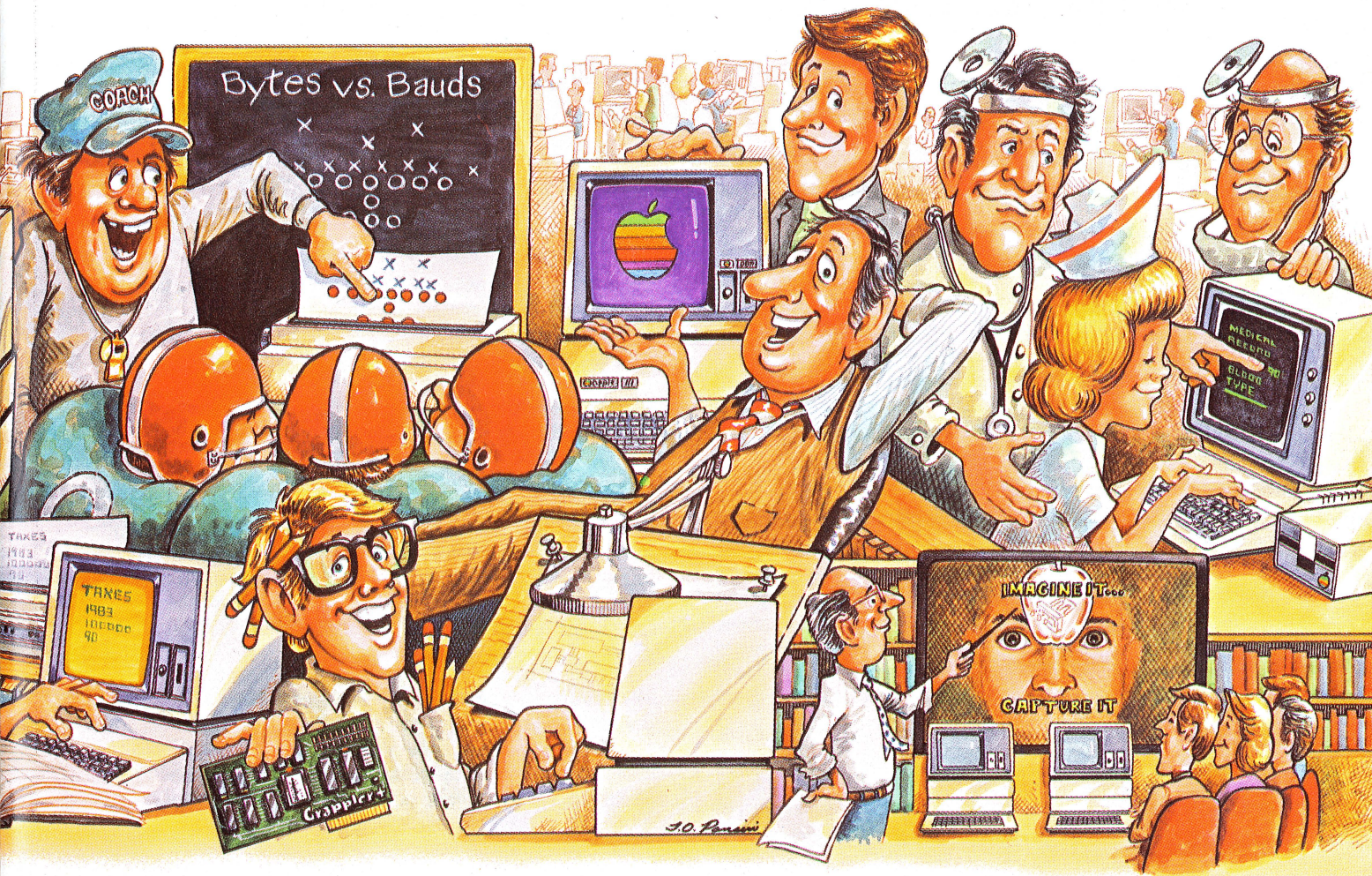
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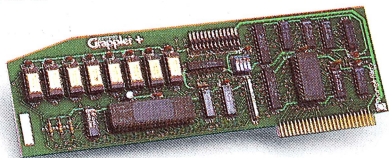


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# A Moving Average Program for Business and Home

by Joe and Chris Jasper

**H**ave you ever wondered if your efforts to reduce your home gas and electric consumption—and the ever-rising cost—are really doing any good? Are you spending more or less money, on groceries, home repairs, automobile upkeep? If you're in a production, retailing, or business environment, you know some months are better than others, but are your product flow, efficiency, and profit, improving or declining?

In these and many other situations, it would be very useful to take a series of values representing daily output, for example, and determine a trend which can be used in planning the best course of action for the future.

Here is a simple program which can show that trend by taking the individual short-term entries, by month, day, value, volume, or whatever; and average them over a specific longer period so the trend can be seen. As each new entry is added to the chosen averaging period, the oldest entry is dropped and the new average is determined.

This type of averaging is called a *moving average*, or *running average*, as it includes a specific number of entries which are re-averaged as new entries take the place of the oldest entries. (A similar effect can be seen in the scrolling of program listings, as the higher numbered lines "push up" the earlier lines until they disappear off the top of the monitor screen.)

## What This Program Can Do

This program establishes a running average "basket" of a given number of months (2 - 24) into which values for each month are placed. When the basket is filled, each new entry displaces the oldest entry. NOTE: The legend "months", as well as the total number of entries, can be easily changed with the procedure given later in this article.

For example, in a four-month running average, entries for January, February, March, and April are: 400, 200, 100, and 300 respectively. The Entry Value total is 1000 for an average of 250. For the next monthly running average, let's assume that a May value of 600 is added, and the January entry is dropped. The new total is 1200 and the average is 300. For the third monthly average, February is dropped as a June value of 1000 is added, for a new total of 2000 and an average of 500.

Obviously the trend is up: 250 to 300 to 500. However, suppose the entry for June was 500. Would the trend still be up, or would it be heading down? Well, the average would be 375,

higher than May's average of 300 but with a trend line that is not rising as fast. If you plot the monthly averages on graph paper, the trend line immediately becomes apparent, and the usefulness of this type of averaging will prove its value to you.

Now, an average of only four months is rather short; a period of twelve or more months would be better, to "smooth" the individual entries. If possible, the average should cover at least two cycles of high-low periods. For example, when determining the trend line for home heating fuel consumption, use a 24 month average. That way, the effects of the cold winter months will be balanced by the summer months, and the effects of an unusually cold (or warm) winter or summer will be averaged with a more normal one. (*You are assuming, of course, that there is still such a thing as a "normal" winter, anywhere.* — PCW.)

Taking this cyclic averaging one step further, a production manager or retailer may want a weekly running average, and a monthly average, and a two-year average as well. All of these are easily obtainable by using the shorter period averages as the entries for the longer periods.

## Program Operation

Lines 200-290: Set the total number of "months" used in the average (M), assign a number to the month (Z), and accept the entry value for that month (A).

Lines 300-400: Total the Entry Values (EN) for the number of months in the average (M) and displays the total; divides EN by M to obtain the Entry Average (EA), and displays EA. NOTE: Line 400 can turn on a printer to print out the value of EA with each new average, and then turn off the printer.

Lines 501-523: The "register stack" where the initial entry values are shifted up by one entry location; the oldest entry is dropped to make room for the newest.

Lines 600-608: Display all values in the register stack (except the oldest entry) which will be used in the next average.

Lines 700-720: Request a new entry to complete the number of entries in the average (actual entry is made at Line 270).

## Program Notes

1. The label "months" in Lines 210 and 260 can be changed to suit the intended use.



2. The number of individual entries in the average can be increased to 88, however this could be unwieldy since there is no provision in this program for changing a specific entry. A better procedure would use successive averages: daily to weekly or monthly (or four-week), then monthly to bi-annually (or 26-week), for example, with a separate version of this program (suitably labeled) for each period.

3. To increase the number of entries:

a. The numeral "24" in Lines 210 and 230 should be changed to show the maximum number of entries in the average.

b. Add lines beginning with Line 524 in the same style as Lines 501-523, to increase the size of the register stack.

c. Lines 601-608 display the entries on the monitor screen. Adding more than three lines to this section will cause first the "Prior Entry Value Total", and with additional lines the "Entry Average", to be scrolled off the top of the screen. The last PRINT statement in Lines 260, 320, 600, and 710 can be deleted as necessary to gain more room on the screen. In any event, a printer will still allow the Entry Average to be recorded. *Important:* The highest A (#) in the average (A (24) in this program) should not be displayed, as its value has not only been shifted, but will be changed by the next entry (Lines 710 and 720).

4. If your printer interface card is in a slot other than #4, change Line 400 accordingly. PR#0 turns the printer off after recording the Entry Average. If you do not have a printer, or the printer is turned off, the printer commands are ignored.

5. In the interest of simplicity, no blanking of the unused entry positions is made (zeros show instead). This should present no problem, as the line just above the entry display indicates how many entries are being used in the average. Also, there is no provision in this program for saving the entries for use at a later date. To do so involves the use of text files, whose required storage and retrieval procedures add an undue amount of complexity to the program.

6. If you make a mistake in entering a value, there are two ways to make a correction:

a. If there are a dozen or more entries in the average, and the error is small in comparison to the other entries, just add or subtract the difference on the next entry.

b. If there are only a few entries in the average, or the incorrect entry is substantial, there is nothing else to do but re-enter the correct values. Write down all the entries to be used in the next average with corrections as necessary, restart the program, enter the written-down values, and continue where you left off.

7. This program, which is actually adapted from a subroutine in a larger program, occupies six sectors of a 16-sector formatted disk (DOS 3.3), but can be compressed by putting several statements (separated by colons), on each program line.

```

100 REM *****
102 REM *   RUNNING AVERAGE   *
103 REM *   FOR 2 - 24 MONTHS   *
104 REM *           BY           *
105 REM *   JOE & CHRIS JASPER   *
106 REM *   COPYRIGHT 1983       *
107 REM *****
108 REM
109 REM
200 HOME : VTAB 10
210 PRINT "HOW MANY MONTHS IN THE
    AVERAGE? (2-24):": PRINT
220 INPUT M
230 IF M > 24 THEN GOTO 210
240 Z = 0: DIM A(88)
250 Z = Z + 1
260 PRINT : PRINT "ENTER VALUE FO
    R MONTH ";Z: PRINT
270 INPUT A(Z)
280 IF Z = M THEN GOTO 300
290 GOTO 250
300 EN = A(1): FOR X = 2 TO M:EN =
    EN + A(X): NEXT X
310 HOME : VTAB 3
320 PRINT : PRINT "PRIOR ";M;" EN
    TRY VALUE TOTAL = ";EN: PRINT

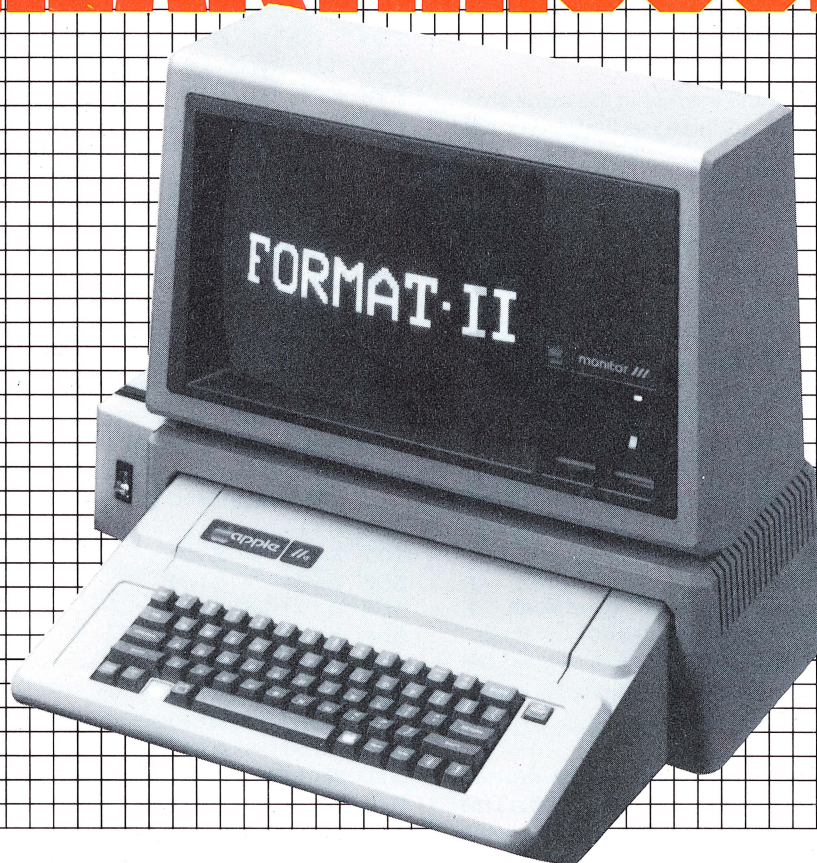
330 EA = EN / M
400 PRINT : PR# 4: PRINT "ENTRY A
    VERAGE = ";EA: PR# 0

501 A(1) = A(2)
502 A(2) = A(3)
503 A(3) = A(4)
504 A(4) = A(5)
505 A(5) = A(6)
506 A(6) = A(7)
507 A(7) = A(8)
508 A(8) = A(9)
509 A(9) = A(10)
510 A(10) = A(11)
511 A(11) = A(12)
512 A(12) = A(13)
513 A(13) = A(14)
514 A(14) = A(15)
515 A(15) = A(16)
516 A(16) = A(17)
517 A(17) = A(18)
518 A(18) = A(19)
519 A(19) = A(20)
520 A(20) = A(21)
521 A(21) = A(22)
522 A(22) = A(23)
523 A(23) = A(24)
600 PRINT : PRINT : PRINT "FIRST
    ";M - 1;" ENTRIES FOR NEXT SE
    T": PRINT
601 PRINT A(1),A(9),A(17)
602 PRINT A(2),A(10),A(18)
603 PRINT A(3),A(11),A(19)
604 PRINT A(4),A(12),A(20)
605 PRINT A(5),A(13),A(21)
606 PRINT A(6),A(14),A(22)
607 PRINT A(7),A(15),A(23)
608 PRINT A(8),A(16)
700 PRINT : PRINT
710 PRINT "NEXT ENTRY FOR NEW AVE
    RAGE:": PRINT
720 GOTO 270
799 END

```



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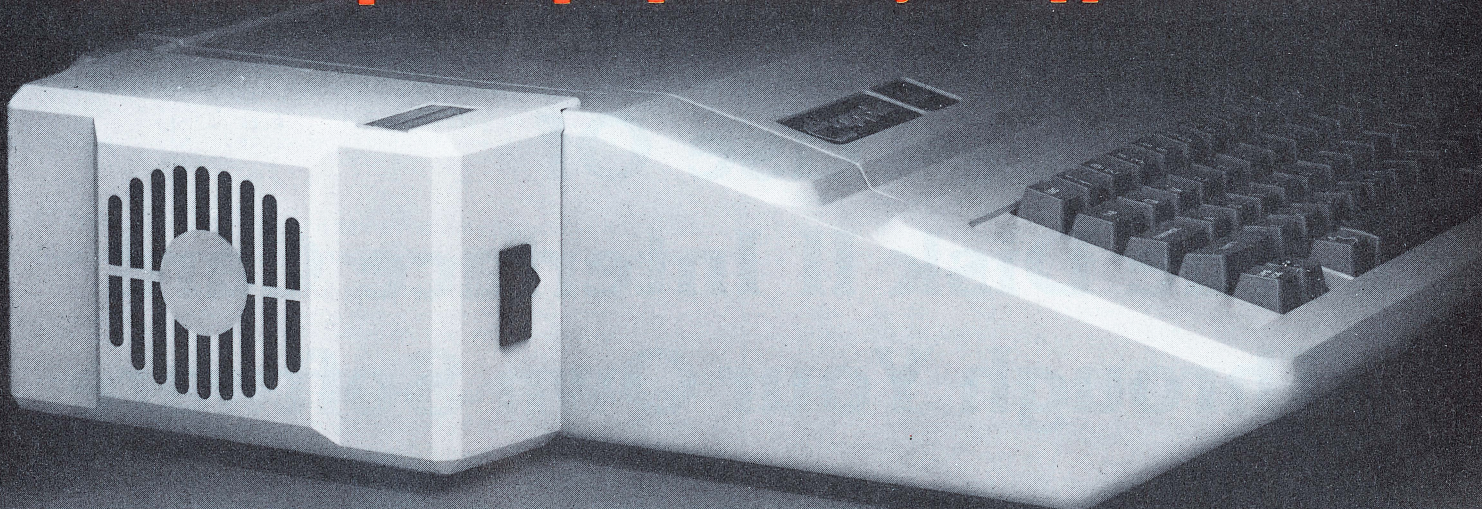
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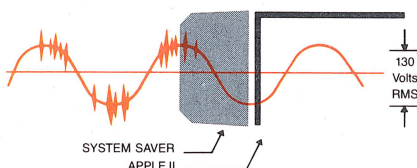
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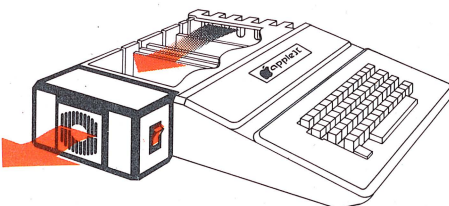


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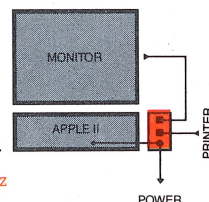
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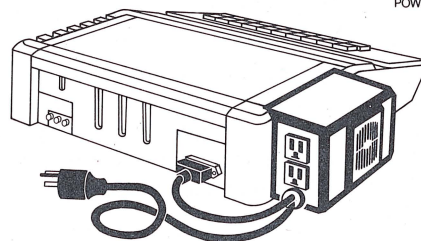
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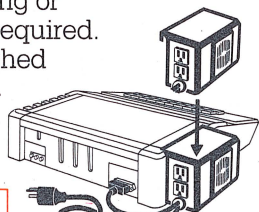
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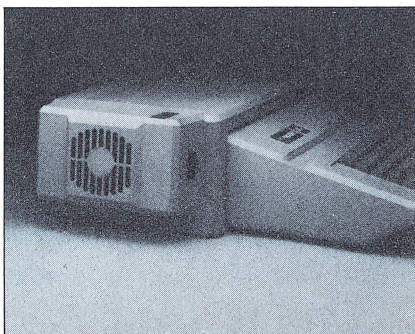
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# Use Of The Disk II Interface Card Through Your Own Software

*by John Uhley*

## Part II Reading and Writing

This is the second in a series of three articles which will discuss several techniques used in accessing the Disk II without the use of Apple DOS or Apple RWTS. This article will introduce the programmer to the processes of reading and writing nibbles to a diskette through the Disk II Interface Card.

Before proceeding with this article, it is essential that both the basic method of accessing the Disk II Interface Card and a method of positioning the Disk II's magnetic head from software be thoroughly understood. These topics were discussed in detail in the first part of this series and will only be reviewed in the following paragraphs. If you are not familiar with these topics it is important that you read part one of this series.

Each of the eight slots in back of the Apple computer is allocated 16 memory locations for I/O control. These memory locations, called softswitches, reside on page \$C0 of memory and occur in 16 byte groups.

SLOT	SOFTSWITCHES
0	\$C080-\$C08F
1	\$C090-\$C09F
2	\$C0A0-\$C0AF
3	\$C0B0-\$C0BF
4	\$C0C0-\$C0CF

5	\$C0D0-\$C0DF
6	\$C0E0-\$C0EF
7	\$C0F0-\$C0FF

Each of the sixteen softswitches will perform a different function depending on the card actually placed in a given slot. The functions of the sixteen softswitches of a Disk II Interface Card placed in slot six are listed below.

MEMORY LOCATION	FUNCTION
\$C0E0	Phase 0 off (positioning)
\$C0E1	Phase 0 on (positioning)
\$C0E2	Phase 1 off (positioning)
\$C0E3	Phase 1 on (positioning)
\$C0E4	Phase 2 off (positioning)
\$C0E5	Phase 2 on (positioning)
\$C0E6	Phase 3 off (positioning)
\$C0E7	Phase 3 on (positioning)
\$C0E8	Power down (drive off)
\$C0E9	Power up (drive on)
\$C0EA	Select 1 (select drive 1)
\$C0EB	Select 2 (select drive 2)
\$C0EC	Readswitch (I/O wormhole)
\$C0ED	Writeswitch (I/O wormhole)
\$C0EE	Clearswitch (I/O wormhole)
\$C0EF	Shiftswitch (I/O wormhole)



One common method of accessing softswitches through software is to use the Apple's indexed addressing mode. By adding various values to the address of a slot zero softswitch it is possible to change the addressed slot by altering the index register alone. For example, if a program is to access the softswitches of the card in slot three the following method could be used:

```

        LDX    #$30      ;(Select Slot 3)
TURNON  LDA    $C089,X  ;(turn on the disk drive in slot 3)
        RTS

```

Using this technique the same routine can access any slot's softswitches by simply changing the value in the X-register:

```

        LDX    #$60      ;(Select slot 6)
JMP     TURNON           ;(And use the above routine
                        ;to turn on the drive)

```

The process of reading nibbles from a diskette is surprisingly simple. The Disk II is brought up to speed and the magnetic head is positioned above the track where the desired data is situated. Then the simple routine shown below can be used to deposit the current nibble into the accumulator:

```

        LDX    #$60      ;(Select slot 6)
READIN  LDA    $C08C,X  ;(Read the nibble)
        BPL    READIN    ;(into memory)
        RTS              ;(and return)

```

It is important to note that this process deposits nibbles into the accumulator. It does NOT deposit bytes. All data written to the diskette by Apple DOS is encoded into nibbles. Thus, any data read into memory from the diskette using the routines in this article will NOT resemble the bytes actually written on the diskette by DOS.

The routine in Figure 1 turns on the disk drive, reads a single nibble from the diskette, and prints that nibble on the screen.

Figure 1.

```

1  *****
2  *
3  * ROUTINE TO READ A NIBBLE *
4  * FROM THE CURRENT TRACK & *
5  * PRINT IN ON THE SCREEN *
6  *
7  *****
8  SLOT      EQU    $0001
9  WAIT      EQU    $0002
10 CURTRK    EQU    $0004
11 DESTRK    EQU    $0005
12 DISKON    EQU    $C089
13 DISKOFF    EQU    $C088
14 DRIVEA    EQU    $C08A
15 READSW     EQU    $C08C
16 PRINTEX    EQU    $FDDA
17 *****
18 *
19 * SET SLOT EQUAL TO SLOT 6 *
20 *
21 *****
22 READNIB    LDA    #$60
23             STA    SLOT
24 *****
25 *
26 * TURN ON DRIVE A AND WAIT *
27 *
28 *****
7004: A6 01    29             LDX    SLOT
7006: BD 89 C0 30             LDA    DISKON,X
7009: BD 8A C0 31             LDA    DRIVEA,X
700C: A9 EF    32             LDA    #$EF
700E: 85 02    33             STA    WAIT
7010: A9 D8    34             LDA    #$D8
7012: 85 03    35             STA    WAIT+1
7014: A0 12    36             MWAITA LDY    #$12
7016: 88      37             MWAITB DEY
7017: D0 FD    38             BNE    MWAITB
7019: E6 02    39             INC    WAIT
701B: D0 F7    40             BNE    MWAITA

```

```

701D: E6 03    41             INC    WAIT+1
701F: D0 F3    42             BNE    MWAITA
43 *****
44 *
45 * READ IN NIBBLE FROM DISK *
46 *
47 *****
7021: A6 01    48             LDX    SLOT
7023: BD 8C C0 49             READLOOP LDA    READSW,X
7026: 10 FB    50             BPL    READLOOP
51 *****
52 *
53 * PRINT NIBBLE ON SCREEN *
54 *
55 *****
7028: 20 DA FD 56             JSR    PRINTEX
57 *****
58 *
59 * ALL DONE... QUIT *
60 *
61 *****
702B: A6 01    62             ALLDONE LDX    SLOT
702D: BD 88 C0 63             DISKOFF LDA    DISKOFF,X
7030: 60      64             RTS

```

--- END ASSEMBLY ---

TOTAL ERRORS: 00

49 BYTES OF OBJECT CODE  
WERE GENERATED THIS ASSEMBLY.

Another important thing to remember when reading more than one nibble from a diskette is that the disk drive's magnetic head is speeding past the nibbles which your program is trying to read. For this reason it is ABSOLUTELY necessary that all nibble reading routines read the next nibble from the diskette no more than 20 cycles after the last nibble read.

The routine in Figure 2 reads 256 nibbles from the diskette and prints them on the screen. This type of routine will be found at the heart of most nibble reading programs.

Figure 2.

```

1 *****
2 *
3 * ROUTINE TO READ A PAGE OF *
4 * NIBBLES FROM THE DISKETTE *
5 * AND PRINT THEM OUT *
6 *
7 *****
8 SLOT      EQU    $0001
9 WAIT      EQU    $0002
10 CURTRK    EQU    $0004
11 DESTRK    EQU    $0005
12 DISKON    EQU    $C089
13 DISKOFF    EQU    $C088
14 DRIVEA    EQU    $C08A
15 READSW     EQU    $C08C
16 PRINTEX    EQU    $FDDA
17 PRINTASC    EQU    $FDED
18 BUFFER     EQU    $2000
19 *****
20 *
21 * SET SLOT EQUAL TO SLOT 6 *
22 *
23 *****
7000: A9 60    24             READNIB LDA    #$60
7002: 85 01    25             STA    SLOT
26 *****
27 *
28 * TURN ON DRIVE A AND WAIT *
29 *
30 *****
7004: A6 01    31             LDX    SLOT
7006: BD 89 C0 32             LDA    DISKON,X
7009: BD 8A C0 33             LDA    DRIVEA,X
700C: A9 EF    34             LDA    #$EF
700E: 85 02    35             STA    WAIT
7010: A9 D8    36             LDA    #$D8
7012: 85 03    37             STA    WAIT+1
7014: A0 12    38             MWAITA LDY    #$12
7016: 88      39             MWAITB DEY
7017: D0 FD    40             BNE    MWAITB
7019: E6 02    41             INC    WAIT
701B: D0 F7    42             BNE    MWAITA
701D: E6 03    43             INC    WAIT+1
701F: D0 F3    44             BNE    MWAITA

```



```

45 *****
46 *
47 * READ IN NIBBLES FROM DISK *
48 *
49 *****
7021: A6 01 50 LDX SLOT
7023: A0 00 51 LDY #$00
7025: BD 8C C0 52 READLOOP LDA READSW,X
7028: 10 FB 53 BPL READLOOP
702A: 99 00 20 54 STA BUFFER,Y
702D: C8 55 INY
702E: D0 F5 56 BNE READLOOP
57 *****
58 *
59 * PRINT NIBBLES ON SCREEN *
60 *
61 *****
7030: B9 00 20 62 PRINTLOOP LDA BUFFER,Y
7033: 20 DA FD 63 JSR PRINTEX
7036: A9 A0 64 LDA #$A0
7038: 20 ED FD 65 JSR PRINTASC
703B: C8 66 INY
703C: D0 F2 67 BNE PRINTLOOP
68 *****
69 *
70 * ALL DONE... QUIT *
71 *
72 *****
703E: A6 01 73 ALLDONE LDX SLOT
7040: BD 88 C0 74 LDA DISKOFF,X
7043: 60 75 RTS
--- END ASSEMBLY ---
TOTAL ERRORS: 00
68 BYTES OF OBJECT CODE
WERE GENERATED THIS ASSEMBLY.

```

## Writing to Disks

A routine which writes nibbles to a diskette must skip exactly 32 cycles between each nibble written. This delay allows the Disk II Interface Card to shift 8 bits of data onto the diskette at the rate of 4 cycles per bit. Any discrepancy in this timing will result in the writing of "half-bits" or partial nibbles. Such nibbles cannot be read back in with any accuracy.

Large amounts of important data (such as a sector) must be preceded by SYNC. Sync is a data nibble (usually \$FF) written with a 36 cycle timing delay. The extra 4 cycles write out a ninth bit which serves to electronically align the disk drive's magnetic head as the sync is read back in. During the read process the ninth bit is lost, causing sync to appear as a data nibble.

The table below illustrates the four softswitches used in the write process. SLOT refers to the index value needed to access the softswitches of a given slot.

MEMORY LOCATION	FUNCTION
\$C08C + SLOT	Readswitch: Used to read in data and to help in shifting nibbles onto the diskette.
\$C08D + SLOT	Writeswitch: Used to set up the write process and to define the nibble to be written.
\$C08E + SLOT	Clearswitch: Clears the shift-switch mode and checks for write protected diskettes.
\$C08F + SLOT	Shiftswitch: Sets the data shift so that data may be shifted out to the diskette.

The process of writing nibbles to a diskette can be divided into four sections. The following paragraphs illustrate how several nibbles (\$DF AA 9D) can be written to a diskette. *Before trying to execute this routine, insert a blank diskette into the disk drive. The diskette will be crashed until it is re-initialized.*

(1) The first step in writing nibbles to a diskette is to prepare

the Disk II Interface Card. This is done by addressing the following softswitches.

```

LDX    #$60      ;(Select slot 6)
JSR    ACTIVATE  ;(Routine to turn)
                ;(on disk drive)
LDA    $C08D,X   ;(Prepare Disk II)
CMP    $C08E,X   ;(for writings)

BCS    WRPROT    ;(If carry set)
                ;(diskette is)
                ;(write protected)

```

These instructions set up the write mode without actually writing anything to the diskette. They also check to see if the diskette is write protected. If the carry is set after the instruction "CMP \$C08E,X" for more than 30 attempts the diskette is write protected.

(2) The next step is to shift the first nibble onto the diskette. This first nibble is always written using the "shiftswitch" wormhole (\$C08F + SLOT). This serves to enable the "physical" write mode. The following instructions will signal the writing of the first nibble to the diskette.

```

LDA    #$DF      ;(Get first nibble)
STA    $C08F,X   ;(Signal shift)
CMP    $C08C,X   ;(to diskette)

```

Following these instructions it is *absolutely* necessary to wait 32 cycles before the next nibble is sent to the diskette. This delay allows the Disk II Interface Card to physically shift the nibble onto the diskette. The delay starts with the 4 cycle instruction "CMP \$C08C,X" and will terminate with the 5 cycle instruction "STA \$C08D,X".

(so, from before we have:)

```

LDA    #$DF
STA    $C08F,X
CMP    $C08C,X      ;(4 cycles)

```

(followed by the rest of the delay:)

```

INC    $00          ;(5 cycles)
DEC    $00          ;(5 cycles)
INC    $00          ;(5 cycles)
BIT    $00          ;(3 cycles)
BIT    $00          ;(3 cycles)
LDA    #$AA         ;(2 cycles- set)
                ;(next nibble ready)
STA    $C08D,X      ;(final 5 cycles)
                ;(and write it out)
CMP    $C08C,X      ;(finish write and)
                ;(start next delay)
                ;(with this instr.)

```

(3) All writing subsequent to that of the initial nibble is accomplished using the "writeswitch" wormhole (\$C08D + SLOT). This was illustrated in the previous paragraph's machine language routine. Before writing the next nibble 32 cycles must be skipped to enable the writing of \$AA to the diskette.

(so, from before we have:)

```

LDA    #$AA
STA    $C08D,X
CMP    $C08C,X      ;(4 Cycles to start)

```

(and the rest of the delay)

```

INC    $00          ;(5 cycles)
DEC    $00          ;(5 cycles)
INC    $00          ;(5 cycles)
BIT    $00          ;(3 cycles)
BIT    $00          ;(3 cycles)
LDA    #$9D         ;(2 cycles- set the)
                ;(next nibble ready)
STA    $C08D,X      ;(final 5 cycles)
                ;(and write out)
CMP    $C08C,X      ;(finish write +)
                ;(start next delay)

```

(4) The fourth and final step of the write process is that of clearing the write mode. If this is not done a track of the diskette *will be destroyed* (until the diskette is re-initialized). Before clearing the write mode, the routine must wait exactly 32 cycles to allow the last nibble (\$9D) to be shifted out onto the diskette.



(So, from before we have:)

```
LDA    #49D
STA    $C08D,X
CMP    $C08C,X          ; (4 cycles)
```

(and the rest of the delay:)

```
INC    $00              ; (5 cycles)
DEC    $00              ; (5 cycles)
INC    $00              ; (5 cycles)
BIT    $00              ; (3 cycles)
BIT    $00              ; (3 cycles)
NOP    $00              ; (2 cycles)
LDA    $C08E,X          ; (final 5 cycles +)
CMP    $C08C,X          ; (clear write mode)
RTS                      ; (All done!)
```

The following source listing illustrates the processes discussed in the last paragraphs. The routine can be entered and assembled at memory location \$7000. Before executing this routine, insert a blank diskette into the disk drive. The diskette will be destroyed until it is re-initialized.

Figure 3.

```

1      *****
2      *
3      * ROUTINE TO WRITE 3 NIBBLES *
4      * OUT TO THE DISKETTE. THE *
5      * DISKETTE WILL BE CRASHED *
6      * SO USE A BLANK DISKETTE *
7      * WHEN EXECUTING THIS FILE *
8      *
9      *****
10     ZERO    EQU    $0000 ;DUMMY
11     SLOT    EQU    $0001
12     WAIT    EQU    $0002
13     CURTRK  EQU    $0004
14     DESTRK  EQU    $0005
15     DISKON  EQU    $C089
16     DISKOFF EQU    $C088
17     DRIVEA  EQU    $C08A
18     READSW  EQU    $C08C
19     WRITESW EQU    $C08D
20     CLEARSW EQU    $C08E
21     SHIFTSW EQU    $C08F
22     PRINTEX EQU    $FDDA
23     *****
24     *
25     * SET SLOT EQUAL TO SLOT 6 *
26     *
27     *****
28     READNIB LDA    #$60
29     STA     SLOT
30     *****
31     *
32     * TURN ON DRIVE A AND WAIT *
33     *
34     *****
35     LDX     SLOT
36     LDA     DISKON,X
37     LDA     DRIVEA,X
38     LDA     #$EF
39     STA     WAIT
40     LDA     #$D8
41     STA     WAIT+1
42     MWAITA  LDY     #$12
43     MWAITB  DEY
44     BNE     MWAITB
45     INC     WAIT
46     BNE     MWAITA
47     INC     WAIT+1
48     BNE     MWAITA
49     *****
50     *
51     * PREPARE FOR WRITE *
52     * (YOU COULD CHECK FOR A ) *
53     * (WPTC HERE WITH A BCS) *
54     *
55     *****
56     LDX     SLOT
57     LDA     WRITESW,X
58     CMP     CLEARSW,X
59     *****
60     *
61     * WRITE OUT FIRST NIBBLE *
62     *
63     *****
64     LDA     #$DF
65     STA     SHIFTSW,X
66     CMP     READSW,X
67     INC     ZERO
7000:  A9 60
7002:  85 01

7004:  A6 01
7006:  BD 89 C0
7009:  BD 8A C0
700C:  A9 EF
700E:  85 02
7010:  A9 D8
7012:  85 03
7014:  A0 12
7016:  88
7017:  D0 FD
7019:  E6 02
701B:  D0 F7
701D:  E6 03
701F:  D0 F3

7021:  A6 01
7023:  BD 8D C0
7026:  DD 8E C0

7029:  A9 DF
702B:  9D 8F C0
702E:  DD 8C C0
7031:  E6 00
```

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```

7033: C6 00 68          DEC ZERO
7035: E6 00 69          INC ZERO
7037: 24 00 70          BIT ZERO
7039: 24 00 71          BIT ZERO
72          *****
73          *
74          * FINISH 32 CYCLES WAIT &
75          * WRITE SECOND NIBBLE
76          *
77          *****
703B: A9 AA 78          LDA #$AA
703D: 9D 8D C0 79       STA WRITESW,X
7040: DD 8C C0 80       CMP READSW,X
7043: E6 00 81          INC ZERO
7045: C6 00 82          DEC ZERO
7047: E6 00 83          INC ZERO
7049: 24 00 84          BIT ZERO
704B: 24 00 85          BIT ZERO
86          *****
87          *
88          * FINISH 32 CYCLES WAIT &
89          * WRITE THIRD NIBBLE
90          *
91          *****
704D: A9 9D 92          LDA #$9D
704F: 9D 8D C0 93       STA WRITESW,X
7052: DD 8C C0 94       CMP READSW,X
7055: E6 00 95          INC ZERO
7057: C6 00 96          DEC ZERO
7059: E6 00 97          INC ZERO
705B: 24 00 98          BIT ZERO
705D: 24 00 99          BIT ZERO
100         *****
101         *
102         * FINISH 32 CYCLE WAIT AND
103         * TURN OFF WRITE SWITCHES
104         *
105         *****
705F: EA 106          NOP
7060: BD 8E C0 107       LDA CLEARSW,X
7063: DD 8C C0 108       CMP READSW,X
7066: 2C DA FD 109       BIT PRINTEX ; dummy
110         *****
111         *
112         * ALL DONE... QUIT
113         *
114         *****
7069: A6 01 115         ALLDONE LDX SLOT
706B: BD 88 C0 116       LDA DISKOFF,X
706E: 60 117          RTS

--- END ASSEMBLY ---

TOTAL ERRORS: 00

111 BYTES OF OBJECT CODE
WERE GENERATED THIS ASSEMBLY.

```

Although the above routine demonstrates the method of writing nibbles to a diskette it is not very practical. A better example of the write process would be a routine which writes 256 bytes (a sector) to the diskette.

One important thing to note about such a routine is that the actual 256 bytes of data must be encoded into valid nibbles before they are written. Depending on the encoding routine used the amount of data actually written is expanded. For the sake of simplicity the encryption routine used for the following write routine will double the amount of data actually written (thus 512 nibbles will be written). A more practical encryption routine, like the one used by Apple DOS, only expands the data by about 40%.

The routine in Figure 4 will write the contents of page \$20 onto the current track of the diskette. *BEFORE EXECUTING THIS ROUTINE IT IS ABSOLUTELY NECESSARY THAT YOU INSERT A BLANK DISKETTE INTO THE DISK DRIVE. THE DISKETTE WILL BE CRASHED UNTIL IT IS RE-INITIALIZED.* Also, make sure that you know which track you are writing the data onto so that you will be able to move back to the same track to read the data back into memory. Both the write routine below and the read routine which follows assume that the sector will be written on track zero. If you wish to use a different track add another 'JSR POSITION' with the new track stored in memory location 'DESTRK'.

Figure 4

```

1          *****
2          *
3          * A "REAL" PROGRAM WHICH
4          * WILL WRITE PAGE $20 TO
5          * DISKETTE
6          *
7          *****
8          ZERO EQU $0000
9          SLOT EQU $0001
10         WAIT EQU $0002
11         CURTRK EQU $0004
12         DESTRK EQU $0005
13         BUFFERA EQU $1000
14         BUFFERB EQU $1100
15         HEXPAGE EQU $2000
16         PHSOFF EQU $C080
17         PHSON EQU $C081
18         DISKOFF EQU $C088
19         DISKON EQU $C089
20         DRIVEA EQU $C08A
21         READSW EQU $C08C
22         WRITESW EQU $C08D
23         CLEARSW EQU $C08E
24         SHIFTSW EQU $C08F
25         MONWAIT EQU $FCAS
26         *****2*****
27         *
28         * SET UP ALL DEFAULTS
29         *
30         *****
31         BEGIN LDA #$60
32              STA SLOT
33              STA CURTRK
34              AND #$00
35              STA DESTRK
36         *****
37         *
38         * ACTIVATE THE DISK DRIVE
39         *
40         *****
41         JSR ACTIVATE
42         JSR POSITION
43         *****
44         *
45         * DRIVER ROUTINE TO WRITE IT
46         *
47         *****
48         JSR NIBBALIZE
49         JSR WRITETRACK
50         *****
51         *
52         * TURN OFF DRIVE AND QUIT
53         *
54         *****
55         LDX SLOT
56         LDA DISKOFF,X
57         RTS
58         *****
59         *
60         * TURN ON DRIVE & WAIT
61         *
62         *****
63         ACTIVATE LDX SLOT
64         LDA DISKON,X
65         LDA DRIVEA,X
66         LDA #$EF
67         STA WAIT
68         LDA #$D8
69         STA WAIT+1
70         ACTIVATEA LDY #$12
71         ACTIVATEB DEY
72         BNE ACTIVATEB
73         INC WAIT
74         BNE ACTIVATEA
75         INC WAIT+1
76         BNE ACTIVATEA
77         RTS
78         *****
79         *
80         * POSITION TO DESIRED TRACK
81         *
82         *****
83         POSITION LDA CURTRK
84         CMP DESTRK
85         BEQ POSITIONA
86         BCC POSITIONB
87         BCS POSITIONC
88         POSITIONA RTS
89         POSITIONB INC CURTRK
90         JMP POSITIOND
91         POSITIONC DEC CURTRK
92         POSITIOND LDA CURTRK
93         AND #$03
94         ASL
95         ORA SLOT
96         TAY
97         LDA PHSON,Y
98         LDA #$56

```



```

7059: 20 A8 FC 99      JSR  MONWAIT
705C: B9 80 C0 100     LDA  PHSOFF,Y
705F: 4C 3A 70 101     JMP  POSITION
*****
102 *
103 *
104 * NIBBALIZE DATA AT PAGE $20 *
105 *
106 *****
7062: A0 00 107     NIBBALIZE LDY  #$00
7064: B9 00 20 108     NIBBALIZEA LDA  HEXPAGE,Y
7067: 6A 109      ROR
7068: 09 AA 110      ORA  #$AA
706A: 99 00 10 111     STA  BUFFERA,Y
706D: B9 00 20 112     LDA  HEXPAGE,Y
7070: 09 AA 113      ORA  #$AA
7072: 99 00 11 114     STA  BUFFERB,Y
7075: C8 115      INY
7076: D0 EC 116      BNE  NIBBALIZEA
7078: 60 117      RTS
*****
118 *****Z*****
119 *
120 * WRITE OUT $20 SYNC NIBBLES *
121 *
122 *****
7079: A6 01 123     WRITETRACK LDX  SLOT
707B: A0 20 124      LDY  #$20
707D: BD 8D C0 125     LDA  WRITESW,X
7080: DD 8E C0 126     CMP  CLEARSW,X
7083: A9 FF 127      LDA  #$FF
7085: 9D 8F C0 128     STA  SHIFTSW,X
7088: DD 8C C0 129     CMP  READSW,X
708B: 24 00 130      BIT  ZERO
708D: EA 131      NOP
708E: E6 00 132     WRITETRACKA INC  ZERO
7090: C6 00 133      DEC  ZERO
7092: 24 00 134      BIT  ZERO
7094: 24 00 135      BIT  ZERO
7096: EA 136      NOP  ;ADD 4 CYCLES
7097: EA 137      NOP  ;FOR SYNC
7098: A9 FF 138      LDA  #$FF
709A: 9D 8D C0 139     STA  WRITESW,X
709D: DD 8C C0 140     CMP  READSW,X
70A0: 88 141      DEY
70A1: D0 EB 142      BNE  WRITETRACKA
*****
143 *****
144 *
145 * WRITE OUT THE OPEN DATA *
146 * MARKS ($D5 AA AF) *
147 *
148 * THESE "CONSTANT'S" ARE *
149 * PLACED ON THE DISKETTE TO *
150 * ALLOW A READ ROUTINE TO *
151 * FIND THE BEGINNING OF THE *
152 * ACTUAL DATA WRITTEN *
153 *
154 *****
70A3: A0 02 155      LDY  #$02
70A5: 24 00 156      BIT  ZERO
70A7: B9 1A 71 157     WRITEODM LDA  DATAMARKS,Y
70AA: E6 00 158      INC  ZERO
70AC: C6 00 159      DEC  ZERO
70AE: 9D 8D C0 160     STA  WRITESW,X
70B1: DD 8C C0 161     CMP  READSW,X
70B4: EA 162      NOP
70B5: EA 163      NOP
70B6: 88 164      DEY
70B7: 10 EE 165      BPL  WRITEODM
*****
166 *****
167 *
168 * WRITE OUT HALF OF THE DATA *
169 *
170 *****
70B9: A0 00 171      LDY  #$00
70BB: EA 172      WRITEDATAA NOP
70BC: B9 00 10 173     LDA  BUFFERA,Y
70BF: E6 00 174      INC  ZERO
70C1: EA 175      NOP
70C2: 9D 8D C0 176     STA  WRITESW,X
70C5: DD 8C C0 177     CMP  READSW,X
70C8: 24 00 178      BIT  ZERO
70CA: EA 179      NOP
70CB: C8 180      INY
70CC: D0 ED 181      BNE  WRITEDATAA
*****
182 *****
183 *
184 * WRITE OUT THE REST OF DATA *
185 *
186 *****
70CE: EA 187      NOP
70CF: B9 00 11 188     WRITEDATAB LDA  BUFFERB,Y
70D2: 24 00 189      BIT  ZERO
70D4: 24 00 190      BIT  ZERO
70D6: EA 191      NOP
70D7: 9D 8D C0 192     STA  WRITESW,X
70DA: DD 8C C0 193     CMP  READSW,X
70DD: 24 00 194      BIT  ZERO
70DF: 24 00 195      BIT  ZERO

```

```

70E1: C8 196      INY
70E2: D0 EB 197      BNE  WRITEDATAB
*****
198 *
199 *
200 * WRITE OUT CLOSE DATA MARKS *
201 *
202 *****
70E4: A0 01 203      LDY  #$01
70E6: B9 1D 71 204     WRITEDCDM LDA  CLOSEDATA,Y
70E9: E6 00 205      INC  ZERO
70EB: EA 206      NOP
70EC: 9D 8D C0 207     STA  WRITESW,X
70EF: DD 8C C0 208     CMP  READSW,X
70F2: 48 209      PHA
70F3: 68 210      PLA
70F4: 88 211      DEY
70F5: 10 EF 212      BPL  WRITEDCDM
*****
213 *****
214 *
215 * WRITE OUT 5 MORE SYNC NIBB *
216 * NOTE: 36 CYCLES IS USED *
217 * BUT IT MAY LOOK LIKE *
218 * 35. THE CHANGE IS *
219 * BECAUSE OF THE BNE *
220 * OVER A PAGE BOUNDARY *
221 *
222 *****
70F7: A0 05 223      LDY  #$05
70F9: A9 FF 224      WRITEND LDA  #$FF
70FB: E6 00 225      INC  ZERO
70FD: C6 00 226      DEC  ZERO
70FF: EA 227      NOP  ;CYCLES
7100: 9D 8D C0 228     STA  WRITESW,X
7103: DD 8C C0 229     CMP  READSW,X
7106: 24 00 230      BIT  ZERO
7108: EA 231      NOP
7109: EA 232      NOP
710A: 88 233      DEY
710B: D0 EC 234      BNE  WRITEND
*****
235 *****
236 *
237 * TURN OFF WRITE AND RETURN *
238 *
239 *****
710D: E6 00 240      INC  ZERO
710F: C6 00 241      DEC  ZERO
7111: E6 00 242      INC  ZERO
7113: BD 8E C0 243     LDA  CLEARSW,X
7116: DD 8C C0 244     CMP  READSW,X
7119: 60 245      RTS
*****
246 *****Z*****
247 *
248 * TABLE WITH DATA CONSTANTS *
249 *
250 *****
711A: AF AA D5 251     DATAMARKS HEX  AFAAD5
711D: BF D5 252      CLOSEDATA HEX  BFD5

```

--- END ASSEMBLY ---

TOTAL ERRORS: 00

287 BYTES OF OBJECT CODE  
WERE GENERATED THIS ASSEMBLY.

The following routine will read the data written by the above routine back into memory. The data will be stored on page \$21 of memory to allow you to compare it with the data written from page \$20 of memory (YES! It actually works!) Before executing this routine be sure that the disk drive's magnetic head is positioned above the same track that the data was written to. If it is not above the same track this routine will NOT be able to read anything into memory.

Figure 5

```

1 *****
2 *
3 * READ IN THE WRITTEN SECTOR *
4 *
5 *****
6 SLOT      EQU  $0001
7 WAIT      EQU  $0002
8 CURTRK    EQU  $0004
9 DESTRK    EQU  $0005
10 TEMP     EQU  $0006
11 BUFFERA   EQU  $1000
12 BUFFERB   EQU  $1100
13 BUFFER    EQU  $2100

```



```

14 *****
15 *
16 * DEFINE DISK II CTRL CARD *
17 *
18 *****
19 PHSOFF EQU $C080
20 PHSON EQU $C081
21 DISKOFF EQU $C088
22 DISKON EQU $C089
23 DRIVEA EQU $C08A
24 READSW EQU $C08C
25 MONWAIT EQU $FCAS

26 *****
27 *
28 * PREPARE FOR READING DATA *
29 *
30 *****
7000: A9 60 31 LDA ##60
7002: 85 01 32 STA SLOT

7004: 85 04 33 STA CURTRK
7006: A9 00 34 LDA ##00
7008: 85 05 35 STA DESTRK

36 *****
37 *
38 * TURN ON DRIVE AND POSITION *
39 *
40 *****
700A: 20 10 70 41 JSR ACTIVATE
700B: 20 40 70 42 JSR POSITION

43 *****
44 *
45 * DRIVER ROUTINE FOR READING *
46 *
47 *****
7010: 20 68 70 48 JSR READTRACK
7013: 20 A1 70 49 JSR DENIBB

50 *****
51 *
52 * TURN OFF DRIVE AND QUIT *
53 *
54 *****
7016: A6 01 55 LDX SLOT
7018: BD 88 C0 56 LDA DISKOFF,X
701B: 60 57 RTS

58 *****
59 *
60 * ACTIVATE THE DISK DRIVE *
61 *
62 *****
701C: A6 01 63 ACTIVATE LDX SLOT
701E: BD 89 C0 64 LDA DISKON,X
7021: BD 8A C0 65 LDA DRIVEA,X
7024: A9 EF 66 LDA ##EF
7026: 85 02 67 STA WAIT
7028: A9 D8 68 LDA ##D8
702A: 85 03 69 STA WAIT+1
702C: A0 12 70 ACTIVATEA LDY ##12
702E: 88 71 ACTIVATEB DEY
702F: D0 FD 72 BNE ACTIVATEB
7031: E6 02 73 INC WAIT
7033: D0 F7 74 BNE ACTIVATEA
7035: E6 03 75 INC WAIT+1
7037: D0 F3 76 BNE ACTIVATEA
7039: 60 77 RTS

78 *****
79 *
80 * DEACTIVATE THE DISK DRIVE *
81 *
82 *****
703A: A6 01 83 DEACTIVATE LDX SLOT
703C: BD 88 C0 84 LDA DISKOFF,X
703F: 60 85 RTS

86 *****
87 *
88 * POSITION TO DESIRED TRACK *
89 *
90 *****
7040: A5 04 91 POSITION LDA CURTRK
7042: C5 05 92 CMP DESTRK
7044: F0 04 93 BEQ POSITIONA
7046: B0 03 94 BCS POSITIONB
7048: 90 06 95 BCC POSITIONC
704A: 60 96 POSITIONA RTS
704B: C6 04 97 POSITIONB DEC CURTRK
704D: 4C 52 70 98 POSITIONC JMP POSITIOND
7050: E6 04 99 POSITIOND INC CURTRK
7052: A5 04 100 POSITIOND LDA CURTRK
7054: 29 03 101 AND ##03
7056: 0A 102 ASL
7057: 05 01 103 ORA SLOT
7059: A8 104 TAY
705A: B9 81 C0 105 LDA PHSON,Y
705D: A9 56 106 LDA ##56
705F: 20 A8 FC 107 JSR MONWAIT
7062: B9 80 C0 108 LDA PHSOFF,Y
7065: 4C 40 70 109 JMP POSITION

```

```

110 *****
111 *
112 * FIND THE OPEN DATA MARKS *
113 *
114 *****
7068: A6 01 115 READTRACK LDX SLOT
706A: A0 02 116 READTRACKA LDY ##02
706C: BD 8C C0 117 READTRACKB LDA READSW,X
706F: 10 FB 118 BPL READTRACKB
7071: D9 B6 70 119 CMP OPENDATA,Y
7074: D0 F4 120 BNE READTRACKA
7076: 88 121 DEY
7077: 10 F3 122 BPL READTRACKB

123 *****
124 *
125 * GET HALF OF THE DATA *
126 *
127 *****
7079: A0 00 128 LDY ##00
707B: BD 8C C0 129 READTRACKC LDA READSW,X
707E: 10 FB 130 BPL READTRACKC
7080: 99 00 10 131 STA BUFFERA,Y
7083: C8 132 INY
7084: D0 F5 133 BNE READTRACKC

134 *****
135 *
136 * GET OTHER HALF OF DATA *
137 *
138 *****
7086: BD 8C C0 139 READTRACKD LDA READSW,X
7089: 10 FB 140 BPL READTRACKD
708B: 99 00 11 141 STA BUFFERB,Y
708E: C8 142 INY
708F: D0 F5 143 BNE READTRACKD

144 *****
145 *
146 * CHECK FOR CLOSE MARKS... *
147 * IF NOT PRESENT TRY AGAIN! *
148 *
149 *****
7091: A0 01 150 READTRACKE LDY ##01
7093: BD 8C C0 151 READTRACKF LDA READSW,X
7096: 10 FB 152 BPL READTRACKF
7098: D9 B9 70 153 CMP CLOSEDATA,Y
709B: D0 C8 154 BNE READTRACK
709D: 88 155 DEY
709E: 10 F3 156 BPL READTRACKF
70A0: 60 157 RTS

158 *****
159 *
160 * CONVERT NIBBLES INTO HEX *
161 * & STORE ON PAGE $21 *
162 *
163 *****
70A1: A0 00 164 DENIBB LDY ##00
70A3: 38 165 DENIBBA SEC
70A4: B9 00 10 166 LDA BUFFERA,Y
70A7: 2A 167 ROL
70A8: 85 06 168 STA TEMP
70AA: B9 00 11 169 LDA BUFFERB,Y
70AD: 25 06 170 AND TEMP
70AF: 99 00 21 171 STA BUFFER,Y
70B2: C8 172 INY
70B3: D0 EE 173 BNE DENIBBA
70B5: 60 174 RTS

175 *****
176 *
177 * DATA SECTOR CONSTANTS *
178 *
179 *****
70B6: AF AA D5 180 OPENDATA HEX AFAAD5
70B9: BF D5 181 CLOSEDATA HEX BFD5

```

--- END ASSEMBLY ---

TOTAL ERRORS: 00

187 BYTES OF OBJECT CODE  
WERE GENERATED THIS ASSEMBLY.

Next month, in the third and final section of this series, the topic of spiral protection systems will be discussed. Both the theory behind the operation of such systems and a working spiral protection system will be covered.

Author's Note: Because the 6502 processor adds an extra cycle when branching over a page boundry the write routines in this article must not be relocated without careful consideration. The routines can only be relocated so that they begin on a given "page" of memory. Thus, the routines will work if located at \$0800, \$7000, \$1500, or \$XX00.



# Speed Reading on the Apple

*Review by Michael A. Fischer*

Speed Read +  
\$59.95 from  
Optimized Systems Software, Inc.  
10379 Lansdale Avenue  
Cupertino, CA 95014  
(408) 446-3099

*San Francisco Apple Group*

Do you wish you had a tachistoscope? Would you like to turn your Apple into one? Do you know what it is? Do you care? If it takes you more than two minutes to read this review, *you should*.

A tachistoscope is an instrument used to increase reading speed. It works by flashing words and phrases on a screen at increasing speeds, training you to read faster. Speed Read + turns an Apple into a tachistoscope. It provides four forms of displaying text. *Single phrase* mode flashes single lines of text at the specified rate of speed. Single phrase is used to develop speed and ease of phrase recognition. *Double phrase* does the same thing but instead of flashing the text always at the middle of the screen, flashes it alternating between the left and right hand sides of the screen. Double phrase develops eye movement and timing.

*Random phrase* flashes the line of text at random locations on the screen. The user can choose to keep the size of the "display window" small, medium or full screen. Random phrase develops peripheral vision. *Column phrase* flashes the text in 20 line columns, training you to read relatively narrow columns such as those found in newspapers and some magazines. The width of each line of text which is displayed is also variable. In all modes except double phrase it can be 8, 16, 24, 32 or 38 letters wide. Double phrase can be 8 or 18 letters wide.

In addition to choosing the phrase mode and line width, you also choose the "flash rate", that is, the speed at which phrases are flashed on the screen. The number selected (1 to 200) translates into words per minute through a mathematical formula given in the documentation. The program also displays the words per minute rate when you are finished.

The program permits you to start reading at any word in the text selection you wish. As the text is flashing you have options other than simply continuing to read the text. You can increase or decrease the flash rate, or widen or narrow the phrase width, all by pressing a key. The keys are mnemonically related to the function involved — "F" for a faster flash rate, "S" for a slower flash rate, "W" for a wider phrase width, and "N" for a narrower width. In addition, you can stop the flashing by pressing another key. When you pause, the screen clears and displays the file name from which you were reading, your reading speed in words per minute, flash rate, and the current word number in the file you are on. You have the option to either continue the program, restart the program (change options) with the same or different text, or end the program.

Speed Read + comes with three built-in texts for practice: *The Outcasts of Poker Flat*, *Rip Van Winkle*, and *The Legend of Sleepy Hollow*. Additional texts can be created by using any text editor or word processor that creates an ASCII text file. No such program is included with the package. All 96 standard

ASCII characters will be flashed, including lower case if your Apple has been modified to display lowercase. The authors recommend upper case only as being easier to read and the text files supplied with the program are all upper case.

For reasons not explained, the program requires that not more than 16 text files be on any diskette used. Each text file name must also have a specified suffix (called an "extender" by the manual). I would prefer having the program deal with these messy details; after all, isn't that one of the reasons for having a computer?

The program performs as specified with no problems. Screen prompts are generally simple and direct. (The only exception is the message "Press Any Key to Load from Diskette:". "Press spacebar to continue" is not only more coherent, but it also prevents the user from pressing such keys as SHIFT, CONTROL or (yipe!) RESET in response to this message.)

The screen prompts should show what will happen if you just press RETURN in response to a question. The manual says what each default is but this should also be shown on the screen.

The program fill justifies each phrase when it is flashed (*i.e.*, it fills spaces between words with blanks so that the left and right edges of the phrase completely fill the width.) The documentation says this is done to train your eyes to learn to read at the "edges" of their vision. I would prefer an option to fill justify or left justify.

The manual is well written and informative. It has a nice feature inside the front cover: it tells you how to run the program without wading through the manual. Later it gives more detailed information and includes both material on how to improve your reading speed and references to more complete works on speed reading. Full instructions are given for using the program to increase your reading speed, including a listing of which mode to use and for how long each day.

The program can be copied with the standard Appie copy program, a refreshing policy on the part of Optimized Systems Software.

Also included with the program is a simple quiz maker. The manual says the quiz maker is just a simple, easy-to-use method of preparing quizzes and notes a more complete method is reserved for a future product. The quiz maker is not as easy to operate as others available on the market. However, since Speed Read + alone is worth the price of the program, the quiz maker is a nice bonus if you don't have a better one.

The complaints I have made about this program are very minor. If you want a method of increasing your reading skill and are willing to spend the 15-20 minutes a day that the manual recommends, the program should prove a real help.





# Apple /// BASIC Compare

by Mike Kramer

*Houston Apple User Group*

ONE OF MY all time favorite utility programs has been Applesoft Compare, written by Chuck Boody and first published in the July/August 1980 issue of *Call - A.P.P.L.E.* I don't know if the errors in the listing belonged to Chuck or if the typesetter caused them, but it just would not work as listed in the article. With a little effort, however, I found the problems and soon had COMPARE working. I have to admit that I had never taken the time to fully understand the workings of COMPARE, but I have used it regularly to find out how the .1, .2, and .3 versions of a program under development differed after a time lapse of several weeks.

I recently bought an Apple /// to keep my old faithful Apple II company, and to minimize contention with my wife and kids for machine time. I soon learned the joys of Apple /// Business BASIC and found myself devoting more and more time to working with the Apple ///. Before long I was up to my old tricks and found my work disks getting filled up with multiple versions of the same program. Although I had been writing a good deal of BASIC code on the Apple ///, I was reluctant to try to convert good old Applesoft COMPARE. This was mainly because I would have to determine how COMPARE worked plus get a little deeper into error handling in Business BASIC. Soon the need got so bad that I decided to go ahead and do the conversion.

Having just received a copy of Apple-CON, the public domain Applesoft to Business BASIC conversion program, I used it to minimize the conversion time. (Apple-CON is available from the IAC; \$10, address in this magazine.) Unlike the old Integer to Applesoft converters, Apple-CON actually converts Applesoft commands to Business BASIC commands. It changes the text window POKEs to WINDOW commands, VTAB to VPOS =, etc. It cannot, however, convert obscure PEEKs, POKEs, and CALLS, but does flag statements it can't handle by preceding them with a REM statement containing a line of dashes. But then this is not an article on Apple-CON, is it? The result is presented in Listing 1.

## So How Does Apple /// BASIC Compare Work?

COMPARE alternately reads two Apple /// Business BASIC programs stored as TEXT files, checks for added, deleted, or

changed lines, and lists the differences on the specified output device (.PRINTER, .CONSOLE, .D2/filename . . .). As mentioned earlier, the original Applesoft COMPARE program logic was somewhat difficult to understand. This was partly due to the use of obscure variable names and partly due to the limitations of Applesoft error handling. Since Business BASIC permits variable names with up to 64 significant characters, very descriptive variable names were used even at the loss of some execution speed. Some performance was also sacrificed by heavy use of REM statements, but the resulting program is easy to read and the logic is easy to follow. With the better error handling provided by Business BASIC, particularly the handling of end of file (EOF) conditions, it was possible to handle error conditions in a more straightforward manner.

In order to speed program execution, the subroutines which read the text files and print to the output device are placed at the beginning of the program. The first thing the program does is jump to Line 200 where a small amount of initialization is done, the title block is displayed on the screen, and the text WINDOW is set to keep the title block on the screen throughout program execution. Lines 260 - 270 determine if instructions are to be displayed. If the instructions in Lines 790 - 860 are displayed, the choice is given to continue with the comparison or end so that the necessary TEXT files may be prepared.

Line 300 displays the default destination pathname for the results of the comparison and waits for a pathname to be entered. Line 310 repositions the cursor and outputs the selected output pathname. This is done so that the default pathname will remain on the screen if a RETURN is pressed to accept the displayed default. The logic used in Line 310 in determining the vertical position assures proper cursor placement if the dialog is on the bottom line. Line 320 OPENS the selected device for output.

The names of the files to be compared are entered in Lines 340 - 430. In Line 350 a flag is set to permit the error handling routine in Lines 910 - 920 to determine whether an error was made when entering the old file name or the new file name. A 1 or 0 could have been used as a flag, but by using a string containing the words "old" or "new" there is no question in the mind of the person reading the listing as to whether the error



occurred in opening or reading the old or new file. Line 360 checks to see whether to display the catalog, open a file for input, or forget the whole thing. If a file name is entered, Line 370 prepares to handle an error condition should the file opened in Line 380 not exist. The same steps are repeated in Lines 390 for the new file. Lines 430 - 460 prepare for outputting the results, while Lines 470 - 480 set up what should be done when the end of either file is reached.

The files are read in Line 510, where GOSUB 80 results in the reading of a line of code from the "old" file and GOSUB 120 causes a line to be read from the "new" file. Line 80 initializes the input string variable for the "old" file to null. Line 90 reads the file one character at a time, building the input string, returning to the main program when a RETURN character is found or the string length reaches 255. If the end of the "old" file is reached, execution continues with Line 620. The same procedure is followed in Line 120 for the "new" file. If the end of the "new" file is reached execution continues with Line 650.

It is important to remember that the strings read in are lines of BASIC code that begin with a line number. Line 530 compares the "old" line to the "new" line. If there is a perfect match, nothing is printed and another line is read from each file. If there is not a perfect match, the line number of each program line is determined in Line 540 by taking the VAL of the two strings containing the "old" statement and the "new" statement.

Line 560 checks for changed lines by looking for matching line numbers and differences in the program line itself. If the line numbers match but the contents of the program lines differ, both the old and new versions of the line are printed along with indication that there was a change in the line.

Line 580 checks for deleted lines by seeing if the old line number is less than the new line number. If it is less, the line is printed and noted as deleted. Since the "old" line has been "used up", it is necessary to read another "old" line to get back into synchronization with the "new" file, hence the GOSUB 80.

If the checks in Lines 530 - 580 fail, the only remaining possibility is that the line was added. The line is printed and noted as having been added and a "new" line is read from disk with a GOSUB 120 to get back into synch with the "old" file. A GOTO 530 is executed to restart the comparison process.

If the "old" file becomes empty first, a branch is made to Line 620, where a new ON EOF is executed to cause the comparison to terminate when the end of the "new" file is reached. Since there is nothing remaining in the "old" file, the remaining lines are read from the "new" file in Line 630, printed, and flagged as having been added.

If the "new" file becomes empty first, a branch is made to Line 650, where a new ON EOF is executed for the "old" file. The remaining lines in the "old" file are read, printed, and flagged as having been deleted.

When both the "old" and "new" files have been depleted, a branch is made to Line 680 where the "End of Comparison" message is printed and the files and output device are closed.

Lines 710 - 770 provide the options of deleting the text files and doing another comparison.

Lines 790 - 890 display the instructions and offers the options of ending or continuing program execution.

Lines 910 - 920 perform limited error handling to prevent program termination if a bad program, volume, or pathname is

```

10  REM          *** Apple /// BASIC Compare ***
20  REM          Written by Mike Kramer
30  REM          11/10/82
40  REM          Based on a program by Charles Boody

50  GOTO 200
60  REM

** Miscellaneous Subroutines **

70  REM

** Get program line from old file **

80  old.statement$=""
90  GET#2;char$:IF char$(<>retrn$ OR LEN(old.statement$)=0 THEN IF LEN
    (old.statement$)<255 THEN old.statement$=old.statement$+char$:GOT
    O 90
100  RETURN
110  REM

** Get program line from new file **

120  new.statement$=""
130  GET#3;char$:IF char$(<>retrn$ OR LEN(new.statement$)=0 THEN IF LE
    N(new.statement$)<255 THEN new.statement$=new.statement$+char$:G
    OTO 130
140  RETURN
150  REM

** Print program line on output device **

160  char.count=0
170  start.char=char.count+1;char.count=char.count+line.length:PRINT#
    1; TAB(6);MID$(line.to.print$,start.char,line.length):IF char.co
    unt<LEN(line.to.print$) THEN 170
180  RETURN
190  REM

```

Listing 1



```

** Main Program **

200 blank$=""
      ":REM 80 spaces
210 line.length=60:bell$=CHR$(7):retrn$=CHR$(13):escape$=CHR$(27):cl
ear.to.end.of.line$=CHR$(31)
220 output.pathname$=".PRINTER":PREFIX$="/compare"
230 TEXT:HOME:INVERSE:VPOS=1:FOR i=1 TO 4:PRINT blank$:NEXT
240 VPOS=2:HPOS=25:PRINT"*** Apple /// BASIC Compare ***":HPOS=29:PR
INT"Written by Mike Kramer":NORMAL
250 WINDOW 0,5 TO 80,24
260 VPOS=2:HPOS=33:PRINT"Instructions? ":GET response$
270 IF response$="y" OR response$="Y" GOTO 790
280 WINDOW 0,5 TO 80,24
290 REM

** Get output pathname **

300 HOME:VPOS=2:PRINT:vtab= VPOS:PRINT"Destination pathname: ";output
t.pathname$:VPOS=vtab:HPOS=23:INPUT"":response$:IF response$<>
" THEN output.pathname$=response$
310 HPOS=23:VPOS=vtab-2*(vtab=24):PRINT output.pathname$
320 OPEN#1 AS OUTPUT,output.pathname$
330 REM

** Enter names of files to compare, END, or CAT **

340 vtab= VPOS:PRINT:INPUT"Old program text file name, END, CAT: ";o
ld.file.name$
350 new.or.old$="old"
360 IF old.file.name$="" THEN VPOS=vtab-2*(vtab=24):GOTO 340:ELSE IF
LEFT$(old.file.name$,3)="cat" OR LEFT$(old.file.name$,3)="CAT"
THEN CATALOG:GOTO 340:ELSE IF old.file.name$="end" OR old.file.n
ame$="END" THEN 890:GOTO 340
370 ON ERR GOSUB 910
380 OPEN#2 AS INPUT,old.file.name$
390 vtab= VPOS:PRINT:INPUT"New program text file name, END, CAT: ";n
ew.file.name$
400 new.or.old$="new"
410 IF new.file.name$="" THEN VPOS=vtab-2*(vtab=24):GOTO 390:ELSE IF
LEFT$(new.file.name$,3)="cat" OR LEFT$(new.file.name$,3)="CAT"
THEN CATALOG:GOTO 390:ELSE IF new.file.name$="end" OR new.file.n
ame$="END" THEN 890:GOTO 390
420 OPEN#3 AS INPUT,new.file.name$
430 HOME:IF output.pathname$=".console" OR output.pathname$=".CONSO
LE" THEN 450
440 VPOS=11:HPOS=29:INVERSE:PRINT" Printing Comparison ":NORMAL
450 title$="Comparison of "+old.file.name$+" to "+new.file.name$
460 PRINT#1:PRINT#1 SPC(INT(40-LEN(title$)/2));title$:PRINT#1
470 ON EOF#2 GOTO 620
480 ON EOF#3 GOTO 650
490 GOTO 510
500 REM

** Read in old and new program lines **

510 GOSUB 80:GOSUB 120
520 REM

** Check for unchanged line **

530 IF old.statement$=new.statement$ THEN 510
540 old.line.num=VAL(old.statement$):new.line.num=VAL(new.statement$
)
550 REM

** Check for changed line **

560 IF old.line.num=new.line.num AND old.statement$<>new.statement$
THEN PRINT#1:PRINT#1;" ** Changed **":line.to.print$=old.stateme
nt$:GOSUB 160:PRINT#1;" To: ":line.to.print$=new.statement$:GOSU
B 160:GOTO 510
570 REM

** Check for deleted lines **

580 IF old.line.num<new.line.num THEN PRINT#1:PRINT#1;" ** Deleted *
**":line.to.print$=old.statement$:GOSUB 160:GOSUB 80:GOTO 530
590 REM

```



```

** None of above so must be added **

600 PRINT#1:PRINT#1;" ** Added **":line.to.print$=new.statement$:GOS
    UB 160:GOSUB 120:GOTO 530
610 REM

** When old file is empty, show rest of new as added **

620 ON EOF#3 GOTO 680
630 GOSUB 120:PRINT#1:PRINT#1;" ** Added **":line.to.print$=new.stat
    ement$:GOSUB 160:GOTO 630
640 REM

** When new file is empty, show rest of file as added **

650 ON EOF#2 GOTO 680
660 PRINT#1:PRINT#1;" ** Deleted **":line.to.print$=old.statement$:G
    OSUB 160:GOSUB 80:GOTO 660
670 REM

** Assume end of data error in last file and end **

680 PRINT#1:PRINT#1; TAB(28);" ** End of Comparisons **":PRINT#1:PRI
    NT#1:PRINT#1
690 CLOSE
700 REM

** Delete text files if desired and end or continue **

710 IF output.pathname$<>"console" AND output.pathname$<>".CONSOLE"
    THEN VPOS=13:PRINT clear.to.end.of.line$
720 PRINT:HPOS=31:PRINT bell$;"Delete text files? ";:GET response$:I
    F response$<>"y" AND response$<>"Y" GOTO 750
730 DELETE old.file.name$
740 DELETE new.file.name$
750 PRINT:PRINT:HPOS=32:PRINT"More comparisons? ";:GET response$
760 IF response$="Y" OR response$="y" THEN PRINT:GOTO 230
770 TEXT:HOME:END
780 REM

** Instructions **

790 HOME:VPOS=2:PRINT"Before running 'COMPARE' the EXEC file 'CAPTUR
    E' must be created and the two"
800 PRINT"programs to be compared must be stored as text files. The
    steps are:"
810 WINDOW 15,7 TO 80,24
820 VPOS=3
830 PRINT" (1) Load 1st program for comparison":PRINT" (2) Type 'EXE
    C CAPTURE.EXEC'"
840 PRINT" (3) Type 'RUN'. When asked, type old file's name":PRINT"
    (4) Load 2nd program for comparison":PRINT" (5) Type 'EXEC CAPTU
    RE.EXEC':PRINT" (6) Type 'RUN'. When asked, type new file's nam
    e"
850 PRINT" (7) Run 'COMPARE'. When asked, enter old":PRINT TAB(6)"fi
    le's name and new file's name":PRINT" (8) Go get a snack"
860 PRINT:PRINT TAB(10);"Press <RETURN> to run 'COMPARE'":PRINT TAB(
    10);"Press <ESCAPE> to end":GET a$
870 IF a$<>retrn$ AND a$<>escape$ GOTO 790
880 IF a$=retrn$ GOTO 280
890 TEXT:HOME:END
900 REM

** Error handling **

910 IF ERR>28 AND ERR<33 THEN PRINT:PRINT bell$;"File not found.":PO
    P:IF new.or.old$="old" THEN 340:ELSE GOTO 390
920 HOME:VPOS=12:HPOS=30:PRINT"Error "; ERR;" in Line "; ERRLIN:END

```

```

0 OUTREC=255:TEXT:HOME:INPUT"Pathname for captured file: ";a$:CREA
    TE a$, TEXT:OPEN#1 AS OUTPUT,a$:OUTPUT#1:LIST 1-:PRINT:CLOSE:OUT
    REC=80:END
5 OUTREC=255:HOME:INPUT"Target drive for CAPTURE EXEC (1/2) ";d$:a
    $=".d"+d$+"/CAPTURE.EXEC":CREATE a$, TEXT:OPEN#1 AS OUTPUT,a$:OU
    TPUT#1:LIST 0:PRINT:CLOSE:OUTREC=80:END
10 REM

```

**\*\* Type RUN 5 to create CAPTURE.EXEC \*\***

Listing 2



entered in Lines 340 and 390. If any other error occurs, the error number and line containing the error are printed by line 920 and program execution ends.

### Creating a Capture Program

The short Business BASIC program in Listing 2 creates a TEXT file called CAPTURE.EXEC which, when EXECed into a BASIC program in memory, will save the program as a TEXT file when RUN is typed. CAPTURE.EXEC should be saved on the same disk as the COMPARE program. Note that the reserved variable OUTREC is set equal to 255 to permit saving the longest possible program line (the CAPTURE program in the Apple Business BASIC Reference Manual fails to do this) and then reset to the default value of 80. After the program in Listing 2 has been typed in, it should be executed by typing RUN 5 to create CAPTURE.EXEC. The program in Listing 2 should also be saved for later use.

### Saving BASIC Programs as TEXT Files

The next step is to save the two Business BASIC programs to be compared as TEXT files on the diskette containing the COMPARE program. First set the Prefix to default to the disk containing the COMPARE program by typing PREFIX\$ = /COMPARE (assuming the volume is named COMPARE). Next load the older version of the program into memory with a LOAD command. Then type EXEC CAPTURE.EXEC. When the cursor returns, type RUN. The program will ask for a pathname for the output file. If you have set the prefix as suggested above, just type the file name. Otherwise type the full pathname. Do not give the name of the original program, but rather a similar name with ".OLD" appended to it. The file name must follow the file naming rules, beginning with a letter and consisting of 15 or fewer letters, numbers, or periods. When the cursor returns, catalog the disk to assure that the file was saved. Repeat the steps for the new file, substituting ".NEW" for ".OLD" in the file name.

### Comparing the BASIC Programs

After the two programs have been saved as TEXT files, run the COMPARE program. You will be asked if you want instructions. Answer with a single keystroke, either Y or N. Next you will be asked for the destination pathname. At this point you may specify any valid output device, such as .PRINTER, .CONSOLE, or a file name. The first time through the program the default destination is .PRINTER. On subsequent passes, the previously specified destination becomes the default. Next, you are asked for the name of the TEXT file containing the old version of the program to be compared. At this point, you may type the file name, END, or CAT if you want to see the catalog. If an invalid or nonexistent file name is entered, you will be asked to enter it again. Next you will be asked to enter the name of the TEXT file containing the new version of the program. The dialog and options are identical to those for the old program. The results of the comparison will then be output to the specified destination device. When the comparison is finished, the program will beep and ask if the files compared should be deleted. You are then given the chance to make more comparisons.

### Sample Run

Listing 3 contains two similar programs which, if compared, will illustrate the use of COMPARE. Listing 4 gives the results of the comparison, showing changed, added, and deleted lines. Two runs were made, showing OLD.BASIC to be the older version the first time and the newer version the second time.

```
5    REM OLD.BASIC
10   PRINT"This is line 10"
20   PRINT"This is line 20"
30   PRINT"This is line 30"
```

```
5    REM NEW.BASIC
20   PRINT"This is line 20"
30   PRINT"That is line 30"
40   PRINT"This is line 40"
```

### Listing 3

#### Comparison of OLD.TEXT to NEW.TEXT

```
** Changed **
      5    REM OLD.BASIC
To:
      5    REM NEW.BASIC

** Deleted **
      10   PRINT"This is line 10"

** Changed **
      30   PRINT"This is line 30"
To:
      30   PRINT"That is line 30"

** Added **
      40   PRINT"This is line 40"

** End of Comparisons **
```

#### Comparison of NEW.TEXT to OLD.TEXT

```
** Changed **
      5    REM NEW.BASIC
To:
      5    REM OLD.BASIC

** Added **
      10   PRINT"This is line 10"

** Changed **
      30   PRINT"That is line 30"
To:
      30   PRINT"This is line 30"

** Deleted **
      40   PRINT"This is line 40"

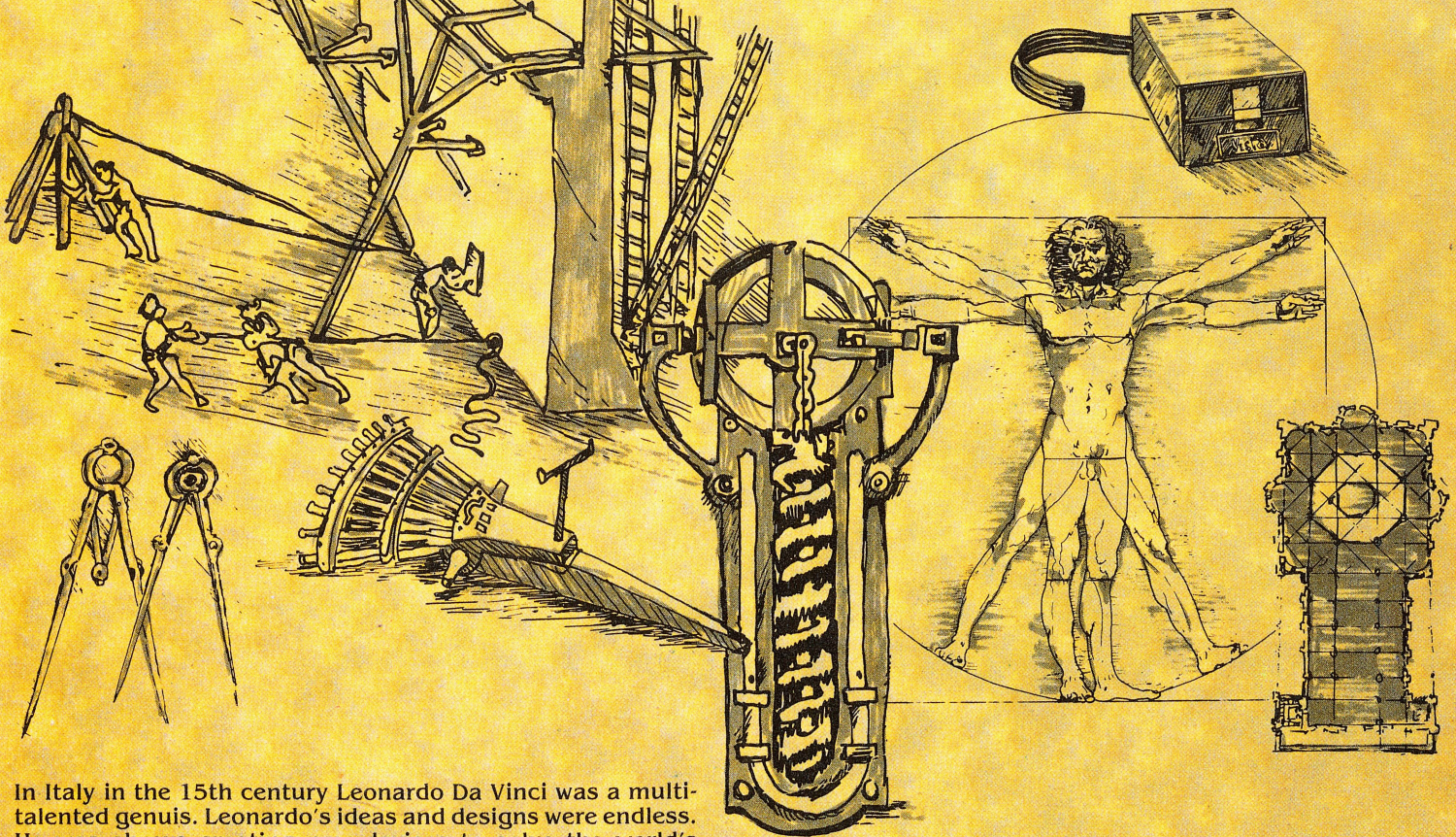
** End of Comparisons **
```

### Listing 4



# VistaDaVinci

## GREAT INNOVATORS

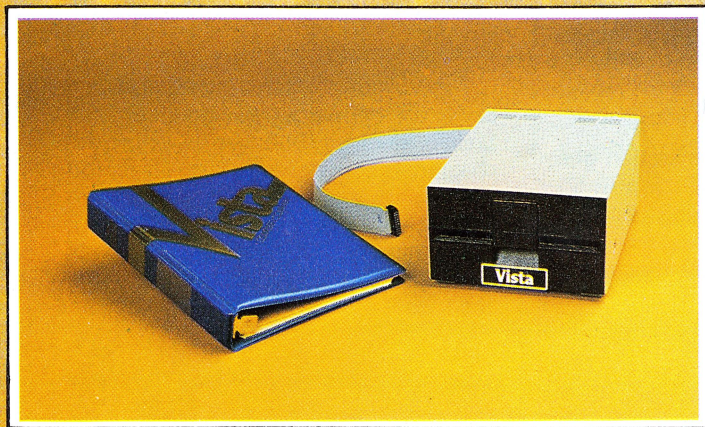


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# The Stamp Collector Computers in Philately

*Review by Richard S. Willing, P.E.*

From: Andent, Inc.  
1000 North Ave.  
Waukegan, IL 60085

**W**ith mini-computers becoming increasingly popular for small business and home management use, as well as for entertainment, it was inevitable that programs aimed at the philatelist would begin to make their appearance. Andent Stamp Collector is the first of these to come to my attention.

Described by Andent's brochure as "... a powerful Data Base program (which) consists of six programs ... ", the 5½-inch disc does contain a very general data base management (DBM) program and a file transfer utility for sorting and copying. The other four "programs" are merely examples (Foreign Stamp List, Domestic Stamp List, Meeting List, Sources List) of files that one could construct from the DBM program. With a fair amount of patience and no knowledge of computer programming *per se*, anyone with this program and the required Apple II computer (with Applesoft, 48K memory, one disk drive and, preferably, a printer) could construct similar files for books, cars, baseball scores, telephone numbers, or scientific names for fish! Andent (a dental corporation, actually) also markets what appears to be the identical DBM program with numismatic examples as "The Coin Collector Catalog".

Adapting "The Stamp Collector" to philately is a task that still rests squarely on the shoulders of the user. The DBM

program permits you to assign, within generous limits, characteristics under which you wish to classify any stamp or cover (or fish, birthday or recipe, for that matter). For example, the country of origin could be one such heading, although it might be better to create a separate file for each country to avoid having to key in the name for each item. Then you might want the catalog number, condition, value, price paid, date of purchase, source, or storage location. Figuratively speaking, the program provides you with the electronic equivalent of pencil and paper; you must decide what you wish to write. Whether anyone could devise a universal data system for stamp collectors is debatable, but certainly Andent has not found one.

Report generation, the typical end-product of these files, will require some experimenting by the user to develop a suitable format. The instructions are unclear (as well as ungrammatical and poorly spelled), and do not always agree in detail with the disk that was sent with them. The manual originally received described an earlier revision of the program, and even one page of the replacement was similarly out of step.

Some of the format-generation questions refer to information that is no longer on the monitor screen, having been scrolled off by the previous questions. Some questions are answered by depressing a single key, others require a key plus «RETURN»; the user has no advance clue.

The use of "default responses" (answers requiring only the use of the «RETURN» key), augmented by reverse field and/or flashing characters, would have greatly improved user interaction

with the keyboard. Too many questions lead to a possible dead-end with no means of backing out. At one point we are allowed to choose between creating a new report format or deleting an existing one, but a) there is no explanation in the manual or on the monitor screen as to how the existing format is to be identified, and b) there is no "parachute" by which to escape should we wish to take neither action. Instead of a graceful exit being provided, we must «RESET» and start the format generating process all over from scratch.

Finally, the choice of a suitable printer is somewhat less than infinite. The program claims to be selectable between the IDS 440 Paper Tiger, the Epson MX80, and the Centronics 737/739. However, when the Centronics option is used, the program acknowledges that you have just chosen the Epson! Bias? No, just a point of sloppy programming. Perhaps the Centronics would work - I don't know. My Apple Silentype did work with sufficient care being taken in configuring the format.

The various shortcomings mentioned above are not unique to Andent or Dick Stein of Rainy City Software (by whom the program is copyrighted). They are far too common in the mushrooming software industry, but one still wishes that more attention would be given to the creation of "friendly" software-understandable, useful and free of booby-traps.

In my opinion, this program is not a panacea for philatelists. At \$49.00, it might be a reasonable acquisition for the DBM user with more than minimal skill or patience.

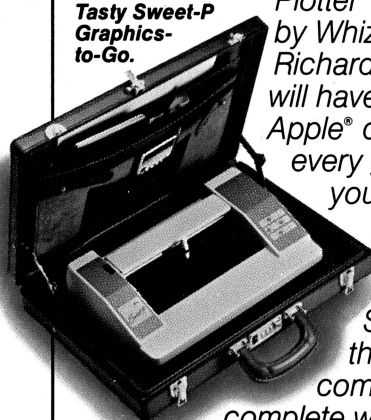




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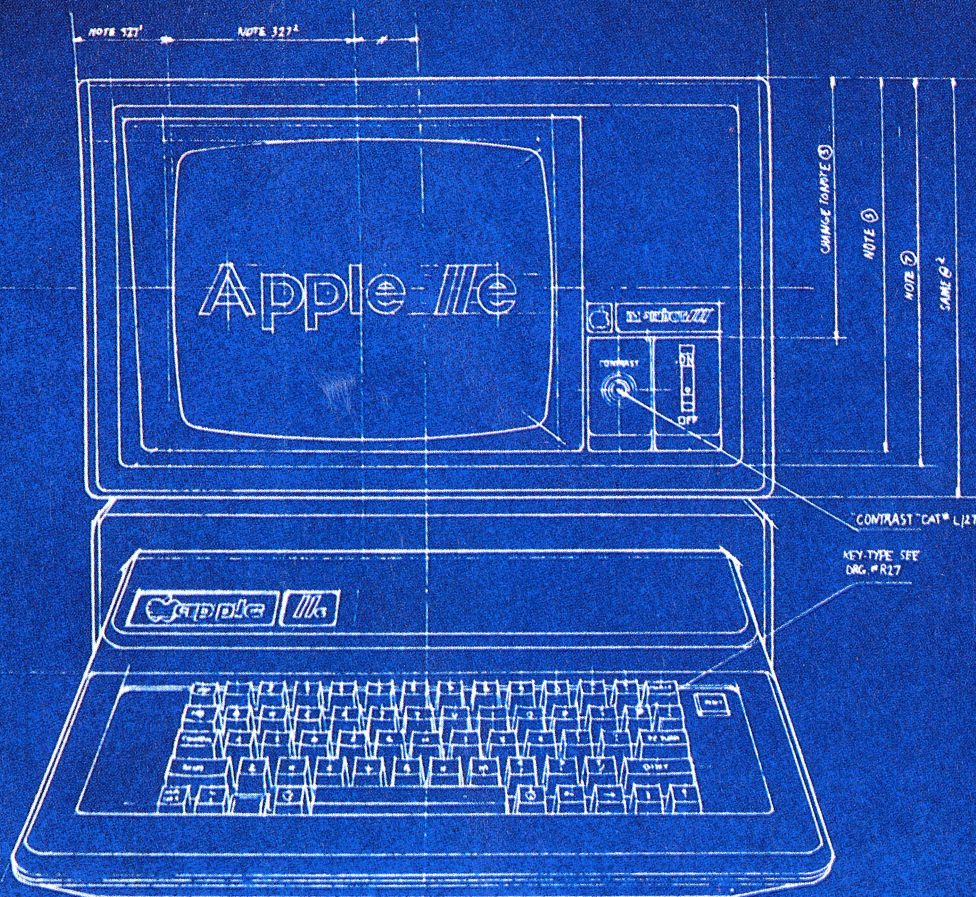
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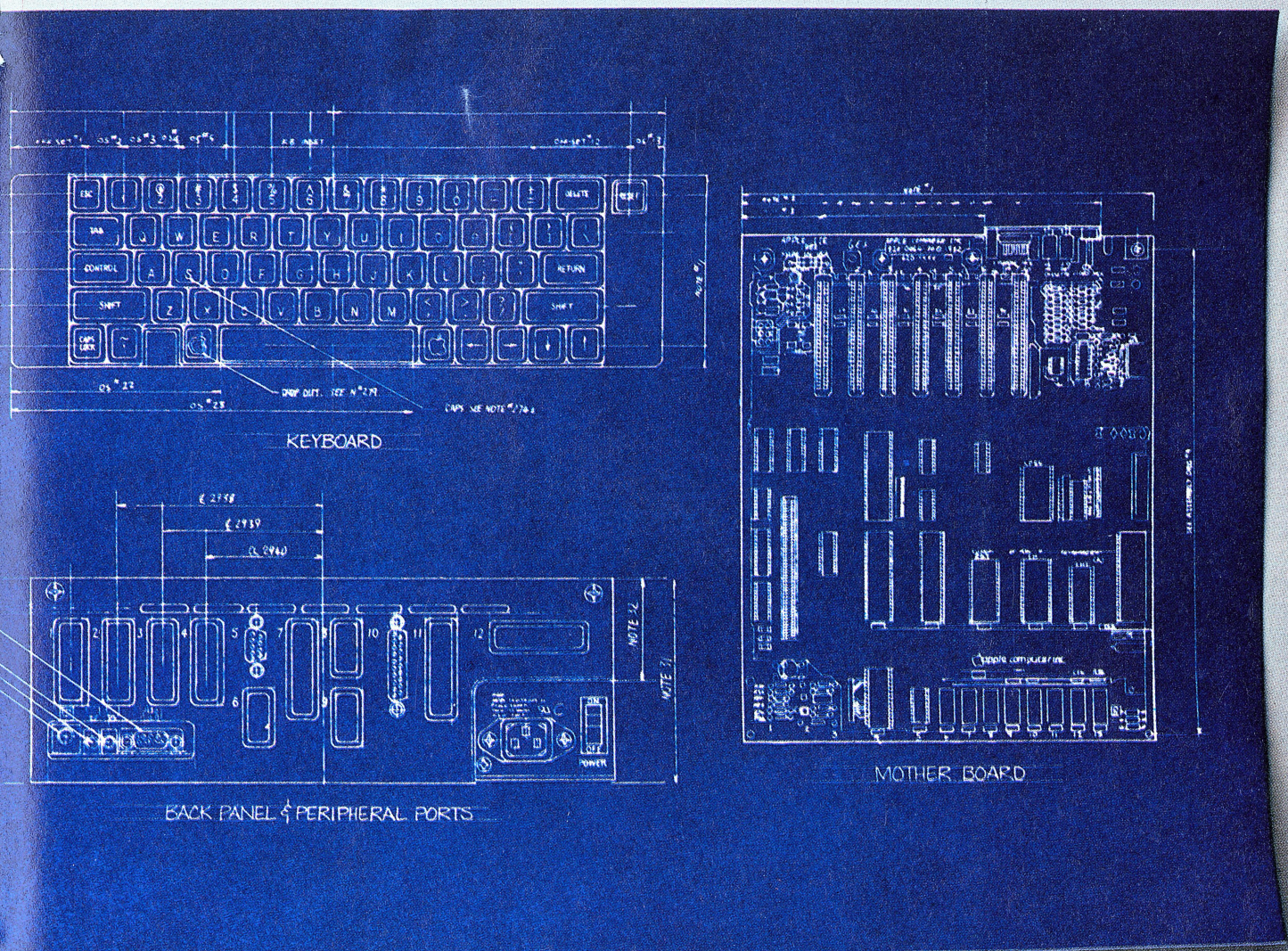
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# Hand Crafted Compiling

by John B. Matthews, M.D.



The first application program ever to actually run on my Apple was one that appeared in the original Apple II documentation: the apocryphal RED BOOK. Entitled "Rod's Color Pattern," it saved what's left of my hair after a futile afternoon spent trying to load "Star Trek" from cassette tape. Listing 1 reproduces this seminal work. It may be run from either Integer or Applesoft BASIC.

While the colors are indeed pretty, the program is slower than me in the morning. The simple solution to speeding things up is to run the program through your favorite BASIC compiler. Now it's about 20 times faster and only 10 times larger, counting the compiler's run time unit. Close but no cigar.

Enter Assembly language. Listing 2 is the program rendered entirely in 6502 assembler. It's roughly twice as big as the original, but it's now more than 50 times faster. If both the compiler and the assembler produce machine language, why the difference? The answer lies in several assumptions we have made about the program which most compilers could not make.

For instance, the compiler must be able to access any or all of a language's primitive routines while our program does nothing but announce itself and repeatedly draw the pattern while checking for the user's signal to stop. Noticing that variables in our version never exceed 255, we allocate only one byte for each and write code only for the indicated arithmetic

operations. A compiler must assume some minimum size for variables and generate calls to general purpose arithmetic routines.

Since the PLOT routine is called so frequently, it is a good example of where optimizing by hand is beneficial. An earlier version of this program simply loaded the Y and A registers with the coordinates to be plotted, whereupon it called the monitor's plot routine at \$F800. This routine, however, spends nearly half its time calculating a graphic screen base address. Our program trades space for speed by looking up the base address in a table and then jumping to the monitor's routine after the time consuming delay. We might go one step further and include the remainder of the monitor's routine right in the source code thereby saving the three clock cycles required to JMP to the monitor.

Less dramatic examples can be found throughout Listing 2. In Line 67 we need not explicitly set the carry bit since the previous subtraction never resets it. The CLC instruction in Line 171 is similarly redundant. Changing Line 174 to read LDY#\$FF allows us to eliminate the DEY in Line 180. While these changes offer less improvement, they are typical methods of optimizing code.

As an exercise for the neophyte, consider translating your own favorite Lo-Res graphic program into assembler. As a challenge, consider the bouncing ball program from the BASIC Tutorial in terms of a truly fast-paced pinball game. Happy Assembly!

## Listing 1

```
10 GR
20 FOR W = 3 TO 50
30 FOR I = 1 TO 19
40 FOR J = 0 TO 19
50 K = I + J
60 COLOR= J * 3 / (I + 3) + I * W / 12
70 PLOT I,K: PLOT K,I: PLOT 40 - I,40 - K: PLOT 40 - K,40 - I
80 PLOT K,40 - I: PLOT 40 - I,K: PLOT I,40 - K: PLOT 40 - K,I
90 NEXT J,I,W: GOTO 20
```



```

3 * ROD'S COLOR PATTERN COMPILED
4 * Adapted from Apple II Ref. Manual, Jan 1978
5 * by John B. Matthews, M.D., Feb 1980
6
7 ORG $800
8 OBJ $800
9 EQU $28
10 EPZ $26
11 EPZ $30
12 EPZ $3A
13 EPZ $3C
14 EPZ $3E
15 EPZ $40
16 EPZ $42
17 EPZ $44
18 EPZ $46
19 EPZ $48
20 EPZ $4A
21 EPZ $4C
22 EPZ $4E
23 EPZ $50
24 EPZ $52
25 EPZ $54
26 EPZ $56
27 EPZ $58
28 EPZ $5A
29 EPZ $5C
30 EPZ $5E
31 EPZ $60
32 EPZ $62
33 EPZ $64
34 EPZ $66
35 EPZ $68
36 EPZ $6A
37 EPZ $6C
38 EPZ $6E
39 EPZ $70
40 EPZ $72
41 EPZ $74
42 EPZ $76
43 EPZ $78
44 EPZ $7A
45 EPZ $7C
46 EPZ $7E
47 EPZ $80
48 EPZ $82
49 EPZ $84
50 EPZ $86
51 EPZ $88
52 EPZ $8A
53 EPZ $8C
54 EPZ $8E
55 EPZ $90
56 EPZ $92
57 EPZ $94
58 EPZ $96
59 EPZ $98
60 EPZ $9A
61 EPZ $9C
62 EPZ $9E
63 EPZ $A0
64 EPZ $A2
65 EPZ $A4
66 EPZ $A6
67 EPZ $A8
68 EPZ $AA
69 EPZ $AC
70 EPZ $AE
71 EPZ $B0
72 EPZ $B2
73 EPZ $B4
74 EPZ $B6
75 EPZ $B8
76 EPZ $BA
77 EPZ $BC
78 EPZ $BE
79 EPZ $C0
80 EPZ $C2
81 EPZ $C4
82 EPZ $C6
83 EPZ $C8
84 EPZ $CA
85 EPZ $CC
86 EPZ $CE
87 EPZ $D0
88 EPZ $D2
89 EPZ $D4
90 EPZ $D6
91 EPZ $D8
92 EPZ $DA
93 EPZ $DC
94 EPZ $DE
95 EPZ $E0
96 EPZ $E2
97 EPZ $E4
98 EPZ $E6
99 EPZ $E8
100 EPZ $EA
101 EPZ $EC
102 EPZ $EE
103 EPZ $F0
104 EPZ $F2
105 EPZ $F4
106 EPZ $F6
107 EPZ $F8
108 EPZ $FA
109 EPZ $FC
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0800	0800	20	40	FB
0803	0803	20	58	FC
0806	0806	A9	16	
0803	0803	20	5B	FB
080B	080B	20	29	09
080E	080E	20	20	20
DISPLAY				
0811	0811	50	44	4C
0814	0814	28	30	29



0897	A5 E3	79	LDA K	08F9	00 80 00	134	*	08F9	00 80 00	HEX 00800080000080	
0899	20 E9 08	80	JSR PLOT			135	BASL				
089C	A4 E1	81	LDY I								
089E	A5 E5	82	LDA FMK								
08A0	20 E9 08	83	JSR PLOT			136				HEX 28A828A828A828A8	
08A3	A4 E5	84	LDY FMK								
08A5	A5 E1	85	LDA I								
08A7	20 E9 08	86	JSR PLOT			137				HEX 50D050D050D050D0	
08AA	20 C8 08	87	JSR DELAY								
08AD	E6 E2	88	INC J								
08AF	A5 E2	89	LDA J			138	BASH			HEX 0404050506060707	
08B1	C9 14	90	CMP #14								
08B3	90 A8	91	BLT NXTJ			139				HEX 0404050506060707	
08B5	E6 E1	92	INC I								
08B7	A5 E1	93	LDA I								
08B9	C9 14	94	CMP #14								
08BB	90 9C	95	BLT NXTI			140				HEX 0404050506060707	
08BD	E6 E0	96	INC W								
08BF	A5 E0	97	LDA W								
08C1	C9 33	98	CMP #33								
08C3	90 90	99	BLT NXTW								
08C5	4C 51 08	100	JMP START								
08C8		101	* DELAY BY SETTING OF PDL			141	*				
08C8		102	* DELAY			142	* PRTEXT ROUTINE				
08C8	A2 00	103	LDX #800			143	*				
08CA	20 1E FB	104	JSR PREAD			144	PRTEXT	PLA	TEXTPT		
08CD	98	105	TYA			145		STA	TEXTPT		
08CE	4A	106	LSR			146		PLA			
08CF	4A	107	LSR			147		STA	TEXTPT+1		
08D0	F0 03	108	BEQ DEL1			148		LDY	#800		
08D2	20 A8 FC	109	JSR WAIT			149	PRT1	INC	TEXTPT		
08D5	2C 00 C0	110	BIT KEY			150		BNE	PRT2		
08D8	30 01	111	BMI EXIT			151	PRT2	INC	TEXTPT+1		
08DA	60	112	RTS			152		LDA	(TEXTPT),Y		
08DB	68	113	PLA			153		BEQ	PRT3		
08DC	68	114	PLA			154		ORA	#80		
08DD	2C 10 C0	115	BIT STROBE			155		JSR	COUT1		
08E0	20 39 FB	116	JSR SETTX			156		JMP	PRT1		
08E3	20 58 FC	117	JSR CLEAR			157	PRT3	LDA	TEXTPT+1		
08E6	4C D0 03	118	JMP #3D0			158		PHA			
08E9		119				159		LDA	TEXTPT		
08E9		120	* PLOT USING TABLE LOOK-UP			160		PHA			
08E9		121	* A=Y-COORD; Y=X-COORD			161		RTS			
08E9		122	* PLOT			162	*	* COLOR SELECTION			
08E9	4A	123	LSR			163	*				
08EA	08	124	PHP			164	*	COLSEL			
08EB	AA	125	TAX			165		CLC			
08EC	BD F9 08	126	LDA BASL,X			166		LDA	J		
08EF	85 26	127	STA GBASL			167		ADC	J		
08F1	BD 11 09	128	LDA BASH,X			168		ADC	J		
08F4	85 27	129	STA GBASL+1			169		STA	A5		
08F6	4C 05 F8	130	JMP #F805			170		LDA	I		
GBASCALC		131				171		CLC			
08F9		132				172		ADC	#803		
08F9		133	* GRAPHIC BASE ADDRESS TABLE			173		STA	A4		
						174		LDY	#800		
						175		SEC			
						176		LDA	A5		
						177	DIV13	SBC	A4		

; GET RETURN ADDRESS  
; AS TEXT POINTER

; BYPASS DOS

; J\*3

; I+3

; J\*3/(I+3)



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0961 C8      178      INY
0962 B0 FB    179      BCS DIVI3
0964 88      180      DEY
0965 84 44    181      STY A5
0967 A5 E1    182      LDA I          ; I*W
0969 85 3C    183      STA A1
096B A5 E0    184      LDA W
096D 85 3E    185      STA A2
096F A9 00    186      LDA ##00
0971 85 41    187      STA A3+1
0973 A2 08    188      LDX ##08
0975 0A      189      SHIFT ASL
0976 26 41    190      ROL A3+1
0978 06 3E    191      ASL A2
097A 90 07    192      BCC BITCNT
097C 18      193      CLC
097D 65 3C    194      ADC A1
097F 90 02    195      BCC BITCNT
0981 E6 41    196      INC A3+1
0983 CA      197      BITCNT DEX
0984 D0 EF    198      BNE SHIFT
0986 85 40    199      STA A3
0988 A9 0C    200      LDA ##0C      ; I*W/12
098A 85 3E    201      STA A2
098C A2 08    202      LDX ##08
098E A5 40    203      LDA A3
0990 85 3C    204      STA A1
0992 A5 41    205      LDA A3+1
0994 06 3C    206      DIV ASL A1
0996 2A      207      ROL
0997 C5 3E    208      CMP A2
0999 90 04    209      BCC BCNT
099B E5 3E    210      SBC A2
099D E6 3C    211      INC A1
099F CA      212      BCNT DEX
09A0 D0 F2    213      BNE DIV
09A2 18      214      CLC          ; SET COLOR
09A3 A5 3C    215      LDA A1
09A5 65 44    216      ADC A5
09A7 29 0F    217      AND ##0F
09A9 85 30    218      STA COLOR
09AB 0A      219      ASL
09AC 0A      220      ASL
09AD 0A      221      ASL
09AE 0A      222      ASL
09AF 05 30    223      ORA COLOR
09B1 85 30    224      STA COLOR
09B3 60      225      RTS
09B4 226 END ; of source LISA v2.5

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# Proof Reader

## *Review by Woody Liswood*

Published by:  
Aspen Software Co.  
P. O.Box 339  
Tijeras, NM 87059  
(505) 281 - 1634  
System CP/M

Cost: about \$50 (no price was shown on the review copy)

**P**ROOF READER does just that. It checks your documents for spelling errors by using the RANDOM HOUSE dictionary.

This program doesn't have as many extra features as *The Word Plus*, which is probably the main competition, but it is half the cost. You should read both reviews and decide just which features you would use most, then make your decision accordingly. Probably the greatest difference between *Proof Reader* and other spelling check programs is the variety and size of the dictionary which comes as the main program library.

When viewed this way, *Proof Reader* wins most comparison contests.

### The Dictionary

*Proof Reader* calls its dictionary a lexicon. I decided to look that word up in *The Random House Dictionary, Concise Edition*. Here is what it said:

- lex-i-con** 1. a dictionary, esp. of Greek, Latin or Hebrew.
- 2. the vocabulary of a particular language or field.

That's certainly stretching the use of the word, but then this is for spelling, not common everyday usage of words. There is an extensive discussion in the documentation which explains each of the dictionaries available with *Proof Reader*, and tells how the set of words in each was selected. It makes for interesting reading.

The normal lexicon supplied with *Proof Reader* contains 32,000 words and takes about 72K on the disk. They also supply a 50,000 word dictionary which takes about 110K. It all depends on your system. There is also a full 83,000 word lexicon available which will be supplied for media charges. If you have more capacity on your particular set-up than normal, you can request the larger lexicons for \$10.

The Apple CP/M version came with the 32,000 word dictionary. I am going to get the 50,000 word dictionary to run

on my 300K floppy drives and will probably get the 83,000 word dictionary to install in the hard-drive. That is a flexibility not found with the other spelling check programs I have reviewed.

### Using Proof Reader

The program disk contains a few programs. The most important is PRF.COM. When you want to run *Proof Reader* you key PRF x:xxxxxxx.xxx. The First x is the drive designation for the file you wish to correct. The second set of x's is the file name itself, and the third set of x's is the file extension, if any. Those of you familiar with CP/M recognize these as standard naming conventions.

*Proof Reader* then goes to work. It notifies you what file it is reading. After reading that file it tells you how many words you used. Then a notice appears letting you know that it is sorting all those words. Next appears the number of unique words in the document. When I am all done, I will add, at the end of this article, how many words and how many unique words *Proof Reader* found.

The actual dictionary checking part I found somewhat interesting. Other programs usually tell you that they are now checking the dictionary and that you should wait a few moments. *Proof Reader* does this but then displays the letters of the alphabet on the screen line this:

ABCDEFGHIJKLMNOPQRSTUVWXYZ

Now, as the checking is continuing, *Proof Reader* replaces each letter of the alphabet with a \* as it is done with that section of the dictionary. Now, that has no real function except to keep folks like me amused as we stare at the screen, but it is better than a blank screen or a blinking cursor. Anyway, after the letter "G" is checked the line will look like this:

\*\*\*\*\*HIJKLMNOPQRSTUVWXYZ

When things are completed, you will be notified as to how many unique words were found.

### The Correction Process

*Proof Reader* has a six-item menu for word corrections. And this is where the program differs from some of the others I have used. First, the words are displayed in the order they are found in the file, rather than in alphabetical order. It works well. I was surprised the first time I ran the program. Then I thought about it. Now I am pleased and would (or may) feel uncomfortable



with the other way. Here's why. When you go through the file in file order, you can maintain a continuity of thought and have some idea as to what in the world you were trying to do with any particular jumble of letters.

Second, *Proof Reader* shows you two lines of text when it displays the misspelling. It puts either a double underline under the word or displays the unknown word in inverse so that you can pick it out easily. This is at your option and will depend on the system you are using.

Here's the menu:

- C - CORRECT (normal mode - shows context)
- R - REVIEW (for rechecking - no context)
- M - MARK unknown words in file with #
- W - WORDSTAR mode: Correct + mark if change width
- D - DISPLAY unknown words on screen
- E - EXIT from Proofreader

C is the most normal mode. It will show you all of the words in order, allow you to correct them as you go along, and show you the words, in context as part of the process.

The Review for rechecking with no context function allows you to check the misspelled word list before you start the actual correction process. For example, you may have a document with a plethora of names which would never be found in a dictionary and which you know are correct. You could use the review to eliminate all of those proper names from the unknown word list prior to your actually checking the document. Another use might be after you have reviewed the words once. You could run *Proof Reader* again just to take a look at the unknown words to see if they are still words you might want to correct. In all honesty, I found this feature less than useful. I would rather add correctly spelled words to the dictionary rather than eliminate them prior to the checking process. And, after I was done with my writing and checking, I would expect the last pass through the document to show no words were unknown. Oh well, somebody will probably disagree with me.

If you wish, you can mark words in the file with a # sign. This will allow you to search and find those marked words with the search function of your word processor. That is not a much used function, but it is handy to be able to flag a word so that you can find a particular paragraph or thought and perhaps rewrite it at a later date, probably with a more common word, or a set of smaller words. Right? The problem is that placing this function at this point in the process makes it an all or nothing task.

The W for the WordStar mode has a special value for all of us WordStar users. By-the-way, I no longer use WordStar as my primary word processor. (I have currently switched to *Spell-binder* as my word processor of choice because of the way in which it supports proportional spacing.) Most folks who use WordStar have right and left on-screen justification. When a word is corrected, it may be of different length than the incorrect word. When that happens, you would lose your justification when you printed the document.

The + allows you to search for only a paragraph which had a word changed which was of a different character length than the original word, and reform only that paragraph. With other spelling checkers there is a message that some words changed length and that you should reform the document. In WordStar, you can if all of your paragraphs have the same margins, just bring the document into memory and key in a Control-Q Q Control-B. That will automatically reform the entire document. However, if you have different margins for some paragraphs, you would have to go paragraph by

paragraph and reform when their was a changed word. That was normally a royal pain. This is a very elegant solution to the problem with WordStar.

The Display command prints the unknown word list to the screen with several words displayed on each line.

Exit allows you back to CP/M. If you did not have any unknown words, you might want to use this to get back to where you want to be.

## The Process

The correction menu has eight items. They are displayed on the screen at the start of the process then are only shown, by letter, during the normal processing of the file.

- C - CORRECT word, prompt will follow
- D - DICTIONARY help. Find a word in the dictionary
- L - LEARN word for auxiliary dictionary
- A - ACCEPT word for rest of session, don't learn
- I - IGNORE word just this once
- Q - QUIT : Abort session. No Changes Saved!
- E - END : Exit and save changes so far.

C, D, L, A, I, Q, E, (H for Help) ?

If you know what the correction should be, you press the C. Then you may key in the correct spelling. If you did not chose the automatic mode during the installation procedure, you must use the correct upper and lower case in the same way as you want the word to appear in your file. Now for a goodie. When you correct the word, your new word is immediately looked up in the dictionary. If it is not there, you are notified that the word still is not a known word and asked if you really want to use that word in your file. That is a very nice feature.

If you don't have any idea of what you were trying to spell, or don't see what the problem is, or even decide that you might want a different word, you can turn to the Dictionary with the D command. The D will cause the dictionary to display about 15 or so words which might be close to your current spelling. You then must key in the correct spelling using the C command. The words from the dictionary will remain displayed on the screen.

When you press D you are actually asked if you wish to look up the incorrect word in the dictionary or try for some other word. You must press «RETURN» to look up the original unknown word or key in a new set of letters for a lookup.

This, to me, was somewhat awkward. This is the only bumpy part of the program. I feel that the majority of folks using the program will normally (about 99% of the time) look up the unknown word. So why cause two keystrokes to use the most common operation? I would have had the unknown word lookup as a separate menu item. (By the way, this is my only criticism of the program)

"What", you exclaim, "That word is spelled correctly." Well, you can tell the auxiliary dictionary to learn that word by keying an L.

The A accepts the word for this session only without adding it to the dictionary. This is helpful just in case you might like to change your mind at some time in the future and would like *Proof Reader* to find the word for you during the next checking operation.

Ignore the word, just this once, does just that.

Half way through the process you realize that a whole bunch of what you did was incorrect. You can Quit the process and nothing will be changed.



If you exit through End, all of the work you have done so far will be saved.

And that is that. Rather simple to use, but powerful in its way of working with words.

### Dictionary Maintenance

The documentation states that you should consider merging your auxiliary dictionary into the main dictionary when the auxiliary reaches about 400 words. You drop back to CP/M and run a program called PRFADD. That's all there is to do. This also differs from some spell check programs which use a special form for their main dictionary and supply no way to add or delete words from the master. With small capacity drives, you are warned to have enough space to contain the old and new dictionaries during the work process.

The process is automatic. You are shown each word as it is merged into the dictionary plus a running count of the words checked so far. When the merger is completed, there are instructions to rename the auxiliary file to a new name for historical purposes. It is a good idea to save those files. You may have made a error in spelling when you "learned" the word. Or you may change your mind about the way you did something. You will need to know what you put into the dictionary so that you can delete those words at a later date.

The only other problem to worry about is to delete unwanted words from your dictionary. You make up a list of the words you wish deleted, and run the add program. You are given a option to add as well as delete words in your file from the master dictionary. Otherwise the procedure is the same as the addition process.

### Documentation

The manual which accompanies *Proof Reader* is around 20 pages long. It is direct, to-the-point, and covers the subject adequately. The program works so well and the menu's are self explanatory that even if you did not have the documentation you could run and understand the program with no problems.

### Install Program

In addition to the terminal identifiers found with the normal install program, you may also define a number of different characters to be recognized as "soft-hyphens". And, if you wish, can set the program to do automatic correction. That means you don't have to worry about capitalization when you enter your corrections. *Proof Reader* would capitalize the new word in the same pattern of the old word. No big deal. If you misspell lots of words like WordStar with a capital in the middle, leave the autocorrection alone. If not, I would turn it on and not worry about things. If necessary, you could always just mark a special capitalized word and return with the word processor to fix it.

Another option in the install program allows you to automatically chain to another program, preferably the Aspen Software Grammatik program.

### Summary

A good program. No faults I could find. No bugs either as far as I could tell. It works, solves problems, and has a good price. What more could you ask for?

According to *Proof Reader* there were, prior to this paragraph, 2372 words in the review. I also used 589 unique words. How about that? (Fine. But your total is now 4 off, thanks to a different kind of proof reader. Human. —PCW.)



# MDCSTAT 2.0

**SINCE 1978**

Used at major universities around the world.

## FULLY INTERACTIVE

Menu driven, sophisticated data editor, user manual on disk & sample data base on disk.

## SOURCE LISTING!!!

Compatible with Microsoft's basic and Digital Research's CP/M (on 5 1/4" disk).

This \$300 package is now available for personal computers, without cutting features.

## WE HAVE SLASHED THE PRICE TO:

 **\$49.95**

Shipping & handling \$2.00  
CA Residents add 6% SST.

## EASY

Try any test at the push of a key, e.g., "A" gives an analysis of variance (1 and 2 way). "P" executes a paired t-TEST, etc., etc.

## EXTENSIVE

Over 100 least square error fits, with automatic selection of the best. Multiple regression with analysis of residues. Computes F and t values. Treats missing values. Variables can be transformed by a dozen functions (e.g., multiply two columns to obtain a new variable), and much more! You may find many more expensive statistical analysis packages, but we think you won't find a better one.

## FLEXIBLE

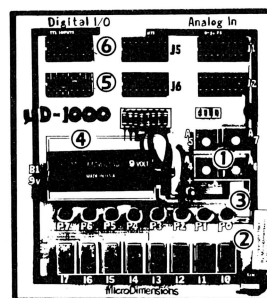
All output is formatted and can be routed to any CP/M device from within the program. Histograms and graphs can be printed on any printer.

**MDC-POB115-NOVATO-CA 94948**

# Input/Output Made Easy!

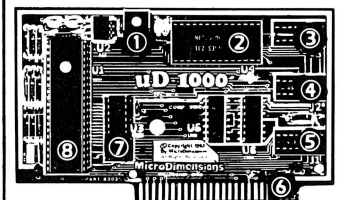
The  $\mu$ D-1000™ I/O System for Apple II\* simplifies computer control. Software support allows control of all inputs and outputs using simple BASIC variable names. System includes two boards shown, cables, 60-page manual and disk.

**Special introductory price ..... \$299.**



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- 1 4 Analog Input Generators
- 2 8 Digital Input Switches
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- 4 Uses 9-V Battery. No External Power Required
- 5 Jacks to User Circuits
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# Ask Us

## (Never Mind How We Know)

A new feature wherein the intrepid Apple Orchard staff (Caffrey, Lipson, Liswood, Weiglin et al) seeks to answer questions, and to share your answers to small but nagging problems, usually solved the hard way. If you have a problem, let us know. If you have solved a problem and are proud of the

solution, let us know. Reach Neil Lipson at 29 S. New Ardmore Ave, Broomall, PA 19008. The rest of us can be reached through the Apple Orchard address. We'll do our best to answer or find an answer, and we'll print those items that are of general interest.

Where was Listing 1 for Mark Darlow's "Ultimate in Userproofing Applesoft Input" article in the July issue? —C. K., Newport, KY.

That's the question I was asking; the answer is, see below. Sorry for the inconvenience. (PCW)

### Listing 1

```

1 HOME : PRINT "USER-PROOF INPUT ROUTINES": PRINT "BY MARK S
. DARLOW"
2 PRINT : PRINT "ENTER -1 TO SWITCH TO LITERAL INPUT"
3 PRINT "ENTER -2 TO SWITCH TO FILENAME INPUT": PRINT "ENTER
-3 TC EXIT PROGRAM"
4 PRINT "ENTER Q TO RETURN TO NUMERICAL INPUT": PRINT
6 PT = PEEK (34): PCKE 34,PT + 7
8 PRINT "ENTER: ";
10 GOSUB 60000
20 PRINT ZZ
25 IF ZZ = - 1 THEN 40
27 IF ZZ = - 2 THEN 100
28 IF ZZ = - 3 THEN PCKE 34,PT: END
30 GOTO 8
40 PRINT "ENTER A LITERAL: ";
50 GOSUB 61000
70 PRINT Z$
80 IF Z$ = "Q" THEN 8
90 GOTO 40
100 PRINT "ENTER A FILENAME: ";
110 COSUB 61100
120 PRINT Z$
130 IF Z$ = "Q" THEN 8
140 GOTO 100
60000 REM NUMERICAL INPUT ROUTINE
60005 EL$ = CHR$ (7)
60010 Z$ = "": REM NULL STRING
60020 ZP% = 0:ZE% = 0:ZI% = 0:ZN% = 0:ZX% = 0:ZD% = 0:ZL = L
OG (10)
60030 ZI% = ZI% + 1
60040 GET Z1$
60047 IF (ZI% = 1 AND Z1$ = CHR$ (13)) OR (ZI% = 2 AND Z$ =
"0" AND Z1$ = "0") THEN 60040
60050 IF Z1$ < "0" OR Z1$ > "9" THEN 60110
60053 IF ZX% > 9 THEN 60400
60055 ZT = 0: IF ZE% > 0 THEN ZT = VAL ( RIGHT$ (Z$ + Z1$, (Z
X% + 1)))
60058 IF (ZN% + 1 - (ZE% > 0)) > 38 THEN 60400
60060 IF ZE% > 0 THEN IF ( VAL ( LEFT$ (Z$,ZI% - ZX% - 1))
< > 0) THEN IF ((( LOG ( ABS ( VAL ( LEFT$ (Z$ + Z1$, (ZI% -
ZX% - 1)))) ) / ZL) + ZT) > 38) THEN 60400
60070 IF ZE% = 0 THEN ZN% = ZN% + 1: IF ZP% > 0 THEN ZD% = Z
D% + 1
60080 IF ZE% > 0 THEN ZX% = ZX% + 1
60100 GOTO 60300
60110 IF Z1$ = " " THEN 60040
60120 IF Z1$ = CHR$ (13) THEN ZZ = VAL (Z$): PRINT : RETUR
N
60125 IF Z1$ = CHR$ (8) AND LEN (Z$) = 0 THEN 60400

```

You have mentioned in the past the importance of cooling for the Apple II. What's the best way to cool down my Apple? —N. B., Phoenix, AZ.

A good question with regard to the Apple II Plus, where temperatures can reach as high as 130 degrees F. One way to cool the Apple is to operate with the cover off, or to purchase a cover with extra vent holes. A fan can cool this down to 105 degrees, which is a considerable improvement.

There are numerous fans on the market. Four that I am familiar with are the M&R Sup'R Fan, the RH Electronics fan, the Mark Four Imports fan (Cool Mark II Fan) in San Gabriel, CA and the Kensington fan. The M&R and Cool Mark fans fit inside the computer, pushing air across the boards. The RH and Kensington fans slip on the outside of the computer, pulling air out.

The most heat-sensitive area of the computer is the RAM chip bank; the RAM chips develop "soft" errors that disappear when the chips cool. If the computer acts flaky when it gets warm, you can pretty well bet that's the reason.

Also, you want the temperature difference minimized for the power supply. As the parts heat and cool, (especially the SCR's), structural tension is created and the semiconductor junctions will develop cracks which will eventually destroy the device.



```

60128 IF Z1$ = CHR$(8) AND LEN(Z$) = 1 THEN PRINT Z1$;"
";Z1$;; GOTO 60010
60130 IF Z1$ = CHR$(8) THEN Z$ = LEFT$(Z$, LEN(Z$) - 1)
: PRINT Z1$;" ";Z1$;;Z1$ = Z1$ - 1: GOTO 60500
60140 IF Z1$ < > "+" AND Z1$ < > "-" THEN 60170
60150 IF Z1$ < > 1 AND (ZE% < > 1 OR ZX% < > 0) THEN 6040
0
60155 IF ZE% = 1 THEN ZX% = 1
60160 GOTO 60300
60170 IF Z1$ < > "." THEN 60200
60180 IF ZP% > 0 OR ZE% > 0 THEN 60400
60190 ZP% = ZP% + 1: GOTO 60300
60200 IF Z1$ < > "E" THEN 60400
60210 IF ZN% < 1 OR ZE% > 0 OR VAL(Z$) = 0 THEN 60400
60220 ZE% = ZE% + 1: GOTO 60300
60300 Z$ = Z$ + Z1$: REM LEGAL CHARACTER
60310 PRINT Z1$;; GOTO 60030
60400 PRINT BL$;; COTO 60040: REM ILLEGAL CHARACTER
60500 IF ZX% > 0 THEN ZX% = ZX% - 1: GOTO 60040
60510 IF ZE% > 0 THEN ZE% = ZE% - 1: GOTO 60040
60520 IF ZD% > 0 THEN ZD% = ZD% - 1: ZN% = ZN% - 1: GOTO 6004
0
60530 IF ZP% > 0 THEN ZP% = ZP% - 1: GOTO 60040
60540 IF ZN% > 0 THEN ZN% = ZN% - 1
60550 GOTO 60040
61000 REM LITERAL INPUT ROUTINE (W/O RIGHT ARROW)
61010 ZN% = 0: GOTO 61200: REM NORMAL ENTRY POINT
61100 ZN% = 1: REM ENTRY POINT FOR FILENAMES (FIRST CHARACTE
R A LETTER; NC COMMAS)
61200 Z1$ = 0: Z$ = "": REM NULL STRING
61205 BL$ = CHR$(7)
61210 Z1$ = Z1$ + 1
61220 GET Z1$
61222 IF Z1$ < > CHR$(8) AND Z1$ < > CHR$(13) AND ((Z1
% > 255) OR (Z1% > 30 AND ZN% = 1)) THEN 61400
61225 IF Z1$ = CHR$(21) THEN 61400
61230 IF Z1$ = "," AND ZN% = 1 THEN 61400
61235 IF Z1$ = CHR$(32) AND Z1% = 1 THEN 61220
61240 IF ZN% = 1 AND Z1% = 1 AND (Z1$ < "A" OR Z1$ > "Z") TH
EN 61400
61250 IF Z1$ = CHR$(13) THEN PRINT: RETURN
61260 IF Z1$ < > CHR$(8) THEN Z$ = Z$ + Z1$: PRINT Z1$;;
GOTO 61210
61270 IF LEN(Z$) = 0 THEN 61400
61275 IF RIGHT$(Z$,1) > " " THEN PRINT Z1$;" ";Z1$;
61280 IF LEN(Z$) > 1 THEN Z$ = LEFT$(Z$, LEN(Z$) - 1)
61300 IF Z1% = 2 THEN 61200
61310 Z1$ = Z1$ - 1
61320 GOTO 61220
61400 PRINT BL$;; REM ILLEGAL CHARACTER
61410 COTO 61220

```

## Listing 2

```

1 HOME : PRINT "USER-PRCCF INPUT ROUTINES": PRINT "BY MARK S
. DARLOW"
2 PRINT: PRINT "ENTER -1 TO SWITCH TO LITERAL INPUT"
3 PRINT "ENTER -2 TO SWITCH TO FILENAME INPUT": PRINT "ENTER
-3 TO EXIT PROGRAM"
4 PRINT "ENTER Q TO RETURN TO NUMERICAL INPUT": PRINT
5 PRINT "ENTER: ";
6 PT = PEEK(34): POKE 34,PT + 7
10 GOSUB 60000
20 PRINT Z$
25 IF Z$ = - 1 THEN 40
27 IF Z$ = - 2 THEN 100
28 IF Z$ = - 3 THEN POKE 34,PT: END
30 GOTO 5
40 PRINT "ENTER A LITERAL: ";
50 GOSUB 61000
70 PRINT Z$
80 IF Z$ = "Q" THEN 5
90 GOTO 40
100 PRINT "ENTER A FILENAME: ";
110 GOSUB 61100
120 PRINT Z$
130 IF Z$ = "Q" THEN 5
140 GOTO 100
60000 REM NUMERICAL INPUT ROUTINE
60002 ZL = LOG(10)
60005 BL$ = CHR$(7)
60007 ZM% = 0
60010 Z$ = "": REM NULL STRING
60020 ZP% = 0: ZE% = 0: ZI% = 0: ZN% = 0: ZX% = 0: ZD% = 0

```

Since the power supply is a major generator of heat, one fix is to purchase an auxilliary power supply, such as M&R's Sup'R Switcher, or to remove the Apple power supply from the Apple case and operate with it outside of the computer. Don't lengthen the cable between power supply and computer; it's a switching power supply, and power drops as the cord length increases. (Neil Lipson)

One of the first problems I had with my Apple was while I was trying to load cassettes. Suddenly, I couldn't get anything to load. Luckily, I found out from the local User Group that there is a small 741 op-amp by the cassette input port which acts like a fuse, and will blow if the input volume is too high. Taking a 75-cent gamble, I replaced that chip, and everything worked fine, saving me a \$15 repair bill at the computer store. This may be ancient history, but it may be worth printing; I sometimes use the cassette output to use a 7-inch reel recorder for backup, as 12-15 disks' worth of material goes on one tape.—Robert Menschel, Chula Vista, CA.

This has been a problem since the Apple II first came out; the 741 op-amps are so cheap that it is of little concern. Nice to hear that it was in a user group that you got an answer. (Neil Lipson)

When my Apple is turned on, the disk drive does not boot, the screen shows a white blank, a field of characters, or garbage. I found that by removing and inserting the second 74LS161 chip from the right edge of row D on the motherboard, I could get the computer to work properly, for a while. Not all software always works, but I can usually get things to work by jiggling that chip. It has become a daily routine. Any suggestions?—Thom Saunders, Houston, TX.

Even though you think you have the right chip, you may not. If there is a problem somewhere else on the motherboard, just the flexing of the board may temporarily solve the problem. At first, I suspected a bad socket on that chip, but after calling you, you said you had replaced the socket. It probably was one of three things: a bent pin on an unrelated chip, a crack in a motherboard trace, or a cold solder joint on the motherboard.

It may not be worth your time to spend forever trying to find this; you can replace the motherboard through the exchange policy after the challenge wears thin. (Neil Lipson)



```

60030 ZI% = ZI% + 1
60040 CET ZI$
60045 IF ZI$ = CHR$(21) THEN CH = PEEK(36):CV = PEEK(37):Z1$ = CHR$(SCRN(CH,2 * CV) + 16 * SCRIN(CH,2 * CV + 1) - 128)
60047 IF (ZI% = 1 AND Z1$ = CHR$(13)) OR (ZI% = 2 AND Z$ = "0" AND Z1$ = "0") THEN 60040
60050 IF Z1$ < "0" OR Z1$ > "9" THEN 60110
60053 IF ZX% > 9 THEN 60400
60055 ZI = 0: IF ZE% > 0 THEN ZT = VAL(RIGHT$(Z$ + Z1$, (ZX% + 1)))
60058 IF (ZN% + 1 - (ZE% > 0)) > 38 THEN 60400
60060 IF ZE% > 0 THEN IF (VAL(LEFT$(Z$, ZI% - ZX% - 1)) < > 0) THEN IF (((LOC(ABS(VAL(LEFT$(Z$ + Z1$, (ZI% - ZX% - 1)))))) / ZL) + ZT) > 38) THEN 60400
60070 IF ZE% = 0 THEN ZN% = ZN% + 1: IF ZP% > 0 THEN ZD% = ZD% + 1
60080 IF ZE% > 0 THEN ZX% = ZX% + 1
60100 GOTO 60300
60110 IF Z1$ = " " THEN 60040
60120 IF Z1$ = CHR$(13) THEN Z$ = VAL(Z$): GOTO 60450
60125 IF Z1$ = CHR$(8) AND LEN(Z$) = 0 THEN 60400
60128 IF Z1$ = CHR$(8) AND LEN(Z$) = 1 THEN PRINT Z1$: GOTO 60010
60130 IF Z1$ = CHR$(8) THEN Z$ = LEFT$(Z$, LEN(Z$) - 1): PRINT Z1$: ZI% = ZI% - 1: GOTO 60500
60140 IF Z1$ < > "+" AND Z1$ < > "-" THEN 60170
60150 IF ZI% < > 1 AND (ZE% < > 1 OF ZX% < > 0) THEN 60400
60155 IF ZE% = 1 THEN ZX% = 1
60160 COTO 60300
60170 IF Z1$ < > "." THEN 60200
60180 IF ZP% > 0 OR ZE% > 0 THEN 60400
60190 ZP% = ZP% + 1: GOTO 60300
60200 IF Z1$ < > "E" THEN 60400
60210 IF ZN% < 1 OR ZE% > 0 OR VAL(Z$) = 0 THEN 60400
60220 ZE% = ZE% + 1: COTO 60300
60300 Z$ = Z$ + Z1$: REM LEGAL CHARACTER
60305 IF ZM% < LEN(Z$) THEN ZM% = LEN(Z$)
60310 PRINT Z1$:
60320 GOTO 60030
60400 PRINT BL$: REM ILLEGAL CHARACTER
60410 GOTO 60040
60450 ZS% = ZM% - LEN(Z$): IF ZS% < = 0 THEN 60490
60460 FOR ZI = 1 TO ZS%
60470 PRINT " ";
60480 NEXT ZI
60490 PRINT: RETURN
60500 IF ZX% > 0 THEN ZX% = ZX% - 1: GOTO 60040
60510 IF ZE% > 0 THEN ZE% = ZE% - 1: GOTO 60040
60520 IF ZD% > 0 THEN ZD% = ZD% - 1: ZN% = ZN% - 1: GOTO 60040
60530 IF ZP% > 0 THEN ZP% = ZP% - 1: GOTO 60040
60540 IF ZN% > 0 THEN ZN% = ZN% - 1
60550 GOTO 60040
61000 REM LITERAL INPUT ROUTINE (W/O RIGHT ARROW)
61010 ZN% = 0: COTO 61200: REM NORMAL ENTRY POINT
61100 ZN% = 1: REM ENTRY POINT FOR FILENAMES (FIRST CHARACTER A LETTER; NO COMMAS)
61200 ZI% = 0: ZM% = 0: Z$ = "": REM NULL STRING
61205 BL$ = CHR$(7)
61210 ZI% = ZI% + 1
61220 GET Z1$
61222 IF Z1$ < > CHR$(8) AND Z1$ < > CHR$(13) AND ((ZI% > 255) OR (ZI% > 30 AND ZN% = 1)) THEN 61400
61225 IF Z1$ = CHR$(21) THEN CH = PEEK(36):CV = PEEK(37):Z1$ = CHR$(SCRN(CH,2 * CV) + 16 * SCRIN(CH,2 * CV + 1) - 128)
61230 IF Z1$ = "," AND ZN% = 1 THEN 61400
61235 IF Z1$ = CHR$(32) AND ZI% = 1 THEN 61220
61240 IF ZN% = 1 AND ZI% = 1 AND (Z1$ < "A" OR Z1$ > "Z") THEN 61400
61250 IF Z1$ = CHR$(13) THEN 61450
61260 IF Z1$ < > CHR$(8) THEN Z$ = Z$ + Z1$: PRINT Z1$: GOTO 61500
61270 IF LEN(Z$) = 0 THEN 61400
61275 IF RIGHT$(Z$, 1) > = " " THEN PRINT Z1$:
61280 IF LEN(Z$) > 1 THEN Z$ = LEFT$(Z$, LEN(Z$) - 1)
61300 IF ZI% = 2 THEN Z$ = "": REM NULL STRING
61310 ZI% = ZI% - 1
61320 COTO 61220
61400 PRINT BL$: REM ILLEGAL CHARACTER
61410 COTO 61220
61450 ZS% = ZM% - LEN(Z$): IF ZS% < = 0 THEN 61490
61460 FOR ZI = 1 TO ZS%
61470 PRINT " ";
61480 NEXT ZI
61490 PRINT: RETURN
61500 IF ZM% < LEN(Z$) THEN ZM% = LEN(Z$)
61510 GOTO 61210

```



# International Apple Core

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# From Dave Alpert

## IAC President

### Fourth Annual Meeting Of The International Apple Core

### Boston Applefest - May 13-15, 1983

It was quite an annual meeting.

First, let's thank the Boston Computer Society and Jonathan Rotenberg for their work in organizing the Boston Applefest. Applefests nationwide are an outgrowth of the first Boston Applefest, and my thanks to the staff of Northeast Expositions, promoters of Applefests, for their cooperation in making Applefest the premier Apple exhibition. My special thanks to Peggy Kilburn for making life easier for those of us who spoke at the show.

The International Apple Core begins its fourth year with more than 400 member User Groups. New directors were seated. Asia became a region. Officers were elected. Committee reports; Old business; New business - it's business as usual. Or is it?

As I travel across the country and talk to Apple enthusiasts, I see a change in the numbers, and in the types of people who have fallen in love with the Apple computer.

It used to be, in days long before disk drives, and when 16K Apples were the norm, that the hobbyists dominated the marketplace. They started the User Groups, wrote the programs and were the recipients of funny looks from people who wondered why anyone would spend their hard earned dollars on a newfangled contraption such as a microcomputer. These hobbyists were the guys who wrote the VisiCalcs, EasyWriters, and DBMasters. These were the types who invented the Hayes modem. And of course, before them, it was a hobbyist who invented the Apple itself.

They were the folks who focused the attention of the rest of the world on the best of the microcomputers. While today's Apple "user" may be a Fortune 500 company, an astronaut on the Space Shuttle, or an educator, there still remains the *human being* who wants little more than to learn, to enjoy, to use, and to *share* his Apple experience. That sharing, over a broad spectrum of human activity, is what the International Apple Core is all about.

At the annual meeting mentioned above, it was decided to avoid using the word "club" to describe IAC members. The expression "User Group" is more appropriate, because our members are groups of users. These are people from many different walks of life who have joined together to share their knowledge, to give and take of one another's experiences, and (as we say of my local group) to pool our ignorance so as to create some intelligence. The IAC has itself become a more broad-based group, serving to connect User groups around the world.

Besides the originating services the IAC provides, (Apple Tech Notes, Disk of the Month, personal computer insurance, etc., as well as other new projects being currently developed), it also provides a means whereby users may exchange useful information among themselves. Through the Special Interest Groups, the *Compiler*, and the **Apple Orchard**, there exist viable means to exchange thoughts. Through the Disk of the Month, special software offerings, and the Public

Domain Library, program exchange is available through the IAC.

The directors, officers, and staff are always looking for new methods to serve our members. Since we serve you, members of our member groups, we encourage you to share your thoughts and suggestions with us.

A side note to the User Group leaders: one of the difficulties in communication in the past has been that we are not always informed when our members' addresses have changed. Too often, mail sent to an outdated or incorrect address is not forwarded to the newly installed individual(s) from your group. We have suggested previously that each group select a person to be its official permanent IAC representative (recipient, if you prefer); and that this person's name and address be sent to the office in Santa Clara for our records. Then, when mailings are made, we will all be sure the information gets to the officers of your group regardless of how often they change.

Now, to answer my earlier question - is it business as usual, or not? My answer is a firm, unequivocal "yes"—and "no". Yes, our goals are the same. No, we are not dedicated solely to one type of user. The IAC recognizes the changing world of Apple users and will continue to grow with the changes.

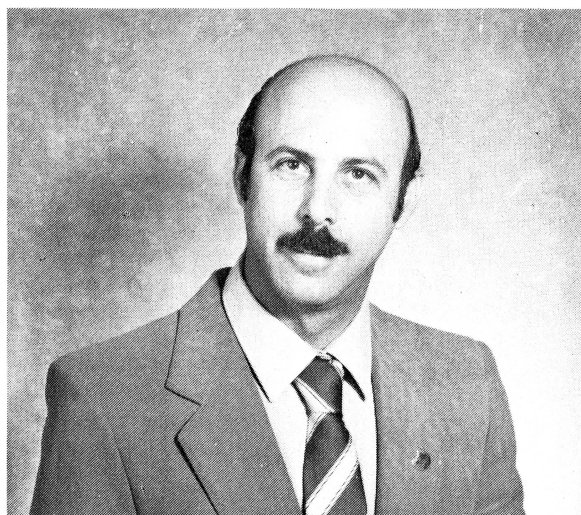
And, finally, my thanks to Apple Computer, Inc. for making all of *us* possible.





# From the IAC Office. . .

Ken Silverman, Executive Director



If you look below, you will notice a new Apple II disk now available. It is an IEEE 488 Pascal Bios. It is the software that allows you to interface IEEE 488 output to your Apple II Pascal system. This has been given to us by Apple Computer, Inc. to be available to the general public and to be put into the "public domain".

In addition, although not listed below, there is a new tutorial disk available for Machine Language. It was put together by the IAC's software chairman Dr. Smith and will give you a good start on learning Machine Language. It contains many useful utilities and one of them is an early version of S-C Software's S-C Assembler. If you are interested in obtaining this disk just send \$8.00 and request the Machine Language Tutorial Disk.

In the next few months we will be announcing many new products at very reasonable prices.

## Available from the IAC:

### Apple /// Software

#### Apple-CON (verter)

from Apple Computer, Inc.

Converts Applesoft programs to

**Business BASIC** ..... \$ 10.00

**DOS to SOS Converter** ..... 10.00

**File Cabinet///** ..... 10.00

### Apple II Software

**Pascal Attach-BIOS disk** .... \$ 8.00

**Hi-Res Games (9 on disk)** ... 8.00

**Applesoft Tutorial** ..... 8.00

**Educational Disk** ..... 8.00

**IEEE Pascal Attach Diskette** ... 8.00

- California residents add 6½% sales tax.
- Any orders to be shipped outside of the U.S., Canada, or Mexico must include additional shipping costs of \$2.50 per disk and \$3.50 per back issue ordered.

### Apple Orchard Back Issues

Vol. 1	No. 1	.....	\$ 2.50
Vol. 2	No. 1	.....	2.50
Vol. 2	No. 2	.....	2.50
Vol. 2	No. 4	.....	2.50
Vol. 3	No. 1	.....	2.50
Vol. 3	No. 2	.....	2.50
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Allow 2-3 weeks for delivery

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**International Apple Core**  
**908 George Street**  
**Santa Clara, CA 95050**

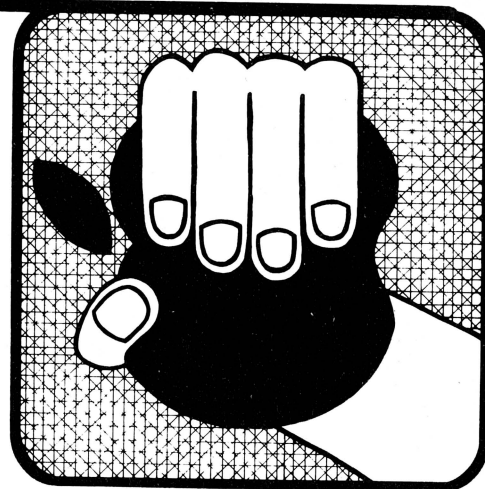
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# Forbidden Fruit

NEW PRODUCTS FOR THE APPLE

Edited by  
Mark L. Crosby



Producers of products for the Apple line of computers should send news releases two months in advance to:

**NEW PRODUCTS EDITOR**  
**Apple Orchard**  
908 George St.  
Santa Clara, CA 95050

The IAC cannot be held responsible for claims made by manufacturers.

## Follow-Up

We pass along the information that Metascope, formerly available from Parity Products, is now available from: Metatek Inc.  
12525 Hummingbird St.  
Minneapolis MN 55433  
(612) 755-9587  
for: \$895.00.

function. Because the driver is within the SOS, all high level languages are supported. Over 2000 compatible instruments, peripherals and other devices may now be added to the Apple ///. Features data transfer speed to 50K bytes per second, a disk containing the SOS driver and cable. Burned in and tested for 80 hours at high temperature. Supports IEEE-488 subsets C1, C2, C3, C4 and C25. \$495.00.  
Innovative Peripheral Systems  
4060 Morena Boulevard  
San Diego, CA 92117  
(619) 270-8600

## Contents:

### HARDWARE

Input Output  
Memory  
Printers/Plotters  
Miscellaneous

### SOFTWARE

Business (General)  
Communications  
Educational  
Financial  
Games/Simulations  
Graphics  
Languages (Programming)  
Personal  
Utilities  
Word Processing

### BOOKS/CATALOGS

### MISCELLANEOUS

## HARDWARE

### Input/Output

With **UltraTerm** from Videx, you'll enjoy sweeping panoramas of spreadsheets never seen before: 128 columns by 32 lines, 132 columns by 24 lines and even 160 columns by 24 lines. You also can get 80 columns by 48 lines. Your word processing will reveal a depth never possible before. It delivers a flicker-free, state of the art display, with 8 x 12 character matrix giving clear, readable characters. You can differentiate those characters in several modes: normal, inverse, bright and dim intensity. \$379.  
Videx  
897 NW Grant Avenue  
Corvallis, OR 97330  
(503) 758-0521

A new **IEEE-488 controller** provides the Apple /// user with IEEE-488 Standard 1978 instruments and peripheral controlling capabilities. SOS driver compatible, allowing the user to use simple PRINT# or INPUT# statements to control the Bus

**Kraft Premium Joysticks** are made with precision linear potentiometers for more accurate cursor control and quicker response. Toggle switches allow instant selection of spring centering or free floating operation. A patented stick mechanism assures smooth, fingertip control. Also features dual-axis trim controls and two fire buttons.

Kraft Systems Company  
450 W. California Avenue  
Vista, CA 92083

**Keywiz VIP** is the first user programmable keyboard with no software interaction. It stores up to four (62 keys) keyboards that you create yourself with up to 8 characters per key - i.e., "then x ="...etc. Imagine the time saved having your BASIC, Pascal or "Calc" commands or even "text" preprogrammed. Program your VIP using preprinted templates as a guide or create your own using the blank reverse side of the template and a pencil or marker. Input up to 8 characters per each key using your computer keyboard. Switch between keyboards at the touch of a button making all 248 user defined keys available. Reprogram any key anytime to suit your needs, even in the middle of Word Processing.  
Creative Computer Peripherals Inc.



## EPSON PRINTER POWER FROM APPLEWRITER II

Unlike many, more expensive word processors, Applewriter II is able to take advantage of all that Epson power and with **GLOSSARYONE**® it's simple! Using single, easy to remember keystrokes, you can

**MX ↔ FX**

BACKSPACE TO e.g. MAKE 7 OR 8  
COMPRESS WIDTH  
DOUBLE STRIKE  
EMPHASIZE  
DOUBLE STRIKE AND EMPHASIZE  
ITALICIZE  
PRINT UNIDIRECTIONALLY  
SUPERSCRIPT AND SUBSCRIPT  
SOLID UNDERLINE  
BROKEN UNDERLINE  
DOUBLE WIDTH  
COMPRESS DOUBLE WIDTH OR  
COMBINE 3Cr → 3Mn + 1Fe + 1Ve  
& INSERT SPECIAL CHARACTERS

! ~ @ \* { } [ ] \_

Do all this and more! So order now and stop memorizing control codes! For disk and simple instructions send 17.95 (FX 19.95) plus 1.50 postage & handling to:

**Mike Iversen**  
#1 Jo-lin Ct., El Sobrante, CA 94803

Compatible w/II+, FX, MX-80/100. Specify computer, printer, interface, fewer features w/o Graftrax.

Aztec Environmental Center  
1044 Lacey Road  
Forked River, NJ 08731

**D-Tach** will make your Apple II or //e into a separate keyboard machine. This external keyboard comes with expandable 6-foot cord and all necessary hardware for installation (takes about 10 minutes). It uses the existing Apple keyboard. Just specify wood type (oak, walnut, or teak) and vinyl laminate color (saddle brown, black, blue, almond or gold). The D-Tach is \$89.00 plus \$3.50 shipping.  
Innovative Micro Goodies  
34732 Calle Fortuna  
Capistrano Beach, CA 92624  
(714) 661-0435

## Memory

**eRAM 80**, designed exclusively for the Apple //e computer, is an enhancement card that allows your //e to display 80 columns instead of the usual 40. It also offers 64K of auxiliary memory. You can even double storage space, up to 128K, by combining eRAM 80 with some software. Plugs into a special auxiliary slot in the back of the Apple //e. \$159.00.  
Quadram Corporation  
4357 Park Drive  
Norcross, GA 30093  
(404) 923-6666

## Printers/Plotters

**Magic Typer** is an interface card for the Apple computer that connects the computer to a Royal or Adler 5010 electronic typewriter making the typewriter function as a letter quality printer as well as a typewriter. This is the lowest priced typewriter on the market today. Comes complete with the interface card, six foot cable, the typewriter adapter card, and complete instructions and a full warranty. No other cards or cables are needed. \$199.95.

Word-Power  
25322 Hillary Lane  
Laguna Hills, CA 92653  
(714) 859-7145

The **Anadex DP-9625A** multi-mode printer now incorporates new features. The printer provides both single and double-pass printing to achieve near letter quality, as well as correspondence, condensed and data processing quality. Graphics capability is standard at either 72 or 144 dots/in. in both the horizontal and vertical dimensions. New letter quality modes include 60 cps at 12 cpi and 50-60 cps with proportional spacing. Also added is condensed printing of 15 and 16.4 cpi, at 150 and 164 cps, respectively. Other enhanced features are 7 foreign character sets in addition to standard USASCII; left, right, and full justification; title centering; positive half line feed; in-line font changes; and RAM expandable to 12.5K in 4K increments. \$1,995.00 in

# Why Your Apple Needs DAVID-DOS™

Your Apple is easier to use and runs much faster with this new, licensed by Apple, DOS 3.3 update.

**DAVID-DOS** (rhymes with moss), is rated AA, (top of its class), by the highly respected software review magazine **PEELINGS II**.

### Novices and Pros

**DAVID-DOS** is licensed by programmers for inclusion in the software they sell. 30 out of 60 bought it on the spot when **DAVID-DOS** was demonstrated at the Original Apple Corps, UCLA. **DAVID-DOS** receives applause from Apple novices. That's why you need **DAVID-DOS**.

### What's Going On

Every Apple II/IIe boots up with **DOS 3.3** software. \* **DOS 3.3** is right there on the first three tracks of all your program disks. Your Apple is supervised constantly by **DOS 3.3**.

### Easier and 5 Times Faster

Our Installation Program goes in and makes specific permanent improvements to **DOS 3.3** on all your disks in a few seconds. (The programs on your disks are not touched). From then on your programs load up to 5 times faster. And you have new features that make your Apple easier to use.

### 100 Sectors in 7 Seconds

Speed Load Applesoft, Integer & Binary 100 sector programs in 7 seconds. Tload Random and Sequential Text Files at the same speed with a simple command.

### Automatic Card Support

Automatically supports an Integer or Applesoft Rom Card in Any slot (without configuring). Single key stroke Catalog and Catalog Abort. Shows Free Sectors Left on each Catalog.

### Nine New DOS Commands

1. TLOAD speeds loads all Text Files.
2. TLIST lists all Random/Sequential Text Files.
3. DUMP Binary/Ascii to screen or printer.
4. DISA disassembles Binary to screen/printer.
5. AL prints program Address & Length.
6. / Single keystroke, second Catalog command.
7. HIDOS moves DOS to the Language Card.
8. FIND hex group in 64K memory in 3 seconds.
9. DATE prints out. Use with Mtn. clock card.

Commands 8 & 9 in Hidos only.

### 10K More Memory

These nine commands operate identical to existing DOS commands. Use A or AS for address and L or LS for length. Enter new commands on the Keyboard and use them in Basic programs with the familiar DS. Use HIDOS in Hello program for turnkey startup, adding 10K free memory.

### Variable Speed Scrolling

TLIST, DUMP, and DISA Features are:

1. Print with PR#.
2. Key operated variable speed control.
3. Instant pause with Space Bar.
4. Exit anytime with Return Key.

### Compatible

All DOS entry addresses have been preserved. DOS is Same length and compatible with most software. David-Dos is copyable and creates fully copyable updated disks. Init areas were used for David-Dos. Works with all Apple IIs including IIe 80 Col. Requires 48K. Complete documentation for screen or printing and many utilities are on the disk.

California residents  
add 6½% sales tax.

**\$39.95**

Foreign add \$2.00.

\*Exceptions are Pascal & CPM Operating Systems.  
Apple II and Applesoft are trademarks of Apple Computer inc.

**DAVID DATA™**

To Order: Send Check To  
12021 WILSHIRE BLVD., SUITE 212D  
LOS ANGELES, CA 90025 (213) 478-7865



# Why Buy a Whole New System when what You Need is a Professional Keyboard?



## FEATURES:

- Plug-in EPS PROMWARE™ Modules reconfigure keyboard for popular software packages, virtually eliminating complex command sequences.
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- PROMWARE Modules available for WORDSTAR\*, VISICALC\*, APPLEWRITER II\*, SCREENWRITER II\*, and other packages.
- Configure your own function keys when writing your own software.
- Unit comes with special BASIC and DOS commands which saves keystrokes.
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- Full cursor control with UP and DOWN arrows improves speed in spread sheet and word processing applications.
- 21-key Numeric Pad allows easy data entry.
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Keyboard \$349.95  
PROMWARE \$32.95

### TECHNICAL SPECIFICATIONS

- Full ASCII character set
- Microprocessor controlled
- Pinout matches APPLE II requirements
- Parallel output
- No additional power required
- 19½ x 9" x 3"
- 5½ lbs.

**Now IIe Compatible!**

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To order, please call or write to:

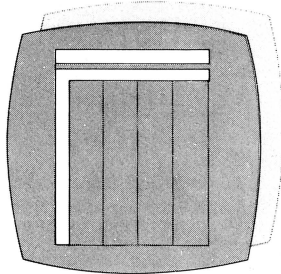
**Executive Peripheral Systems, Inc.** 800 San Antonio Road, Palo Alto, CA 94303 (415) 856-2822

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# The VisiCalc® Audio Course™



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you could have a Personal Tutor come into your office (or home) and systematically teach you the 'Ins and Outs' of the powerful VisiCalc® electronic spreadsheet program? Would you be interested? (OF COURSE!)

Now you can have your own Personal Tutor™ instructional VisiCalc® Audio Course™ for only

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## Produced By VisiCalc® Specialists:

The VisiCalc® Audio Course was written by and produced in conjunction with SpreadSoft™, The Electronic Spreadsheet Support People™. The programmers at SpreadSoft™ are experts at VisiCalc® applications, and provide insights and programming tips gained from their creation of VisiCalc® Business Financial and Management templates.

## Contents:

### TAPE ONE: The VisiCalc® Beginner™

A 90-minute instructional tape introducing the VisiCalc commands. The Beginner will lead you step by step through both the major commands and sub-commands. The emphasis is on a practical demonstration of each command using a 'hands on' 'try it out and learn' approach.

### TAPE TWO: The VisiCalc® Functions™

A 90-minute instructional tape that will teach you how to use VisiCalc's:

- Arithmetic Functions @INT, @ABS, @EXP, @LN, @LOGIO
- Listing Functions @SUM, @COUNT, @AVE, @MIN, @MAX
- Trigonometric Functions @SIN, @COS, @TAN, @ASIN, @ACOS, @ATAN
- Logical Functions @TRUE, @FALSE, @AND, @OR, @NOT, @IF, @ISNA, @ISERROR
- Special Functions @NA, @ERROR, @PI, @NPV, @LOOKUP, @CHOOSE
- Nested Functions and Boolean operators.

This tape guides the new user of VisiCalc without insulting the advanced user. The Functions tape will give you a new appreciation of how to get the most out of the built-in VisiCalc functions and their usefulness.

### TAPE THREE: VisiCalc® Templating™

A culminating high-point instructional 90-minute tape designed to introduce and teach you how to design and produce VisiCalc® templates and overlays. Using all you have learned from the Beginner and Functions tapes you will design specific templates (spreadsheet models) and save to disk and reload. Detailed discussions (with examples) will address input areas, calculation areas, reports, output areas and documentation of templates. Example templates include budgeting, planning, inventory, and more!

## Featuring:

- Three detailed 90-minute instructional tapes presented in a natural conversational manner (no interrupting bells or beeps or flipping of the tape in the middle of the subject);
- A diskette complete with examples, templates, overlays and exercises;
- A detailed Reference Guide;
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## Advantages of the VisiCalc® Audio Course™:

- Easy to use, effective Audio course.
- Course authored by VisiCalc® Programmers.
- The course doesn't take control of your computer away from you, but instead allows you to obtain hands-on experience with VisiCalc®.
- You don't have to be a computer programmer to learn how to use the best-selling VisiCalc®, this Personal Tutor™ will bring it to life at your pace.
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## Requirements:

Your computer system, VisiCalc® program, Audio cassette player [no computer hookup is necessary for the cassette player.] Specify computer system.

To order ... See your local computer dealer or order direct.  
Visa/MC, money order, or check acceptable.  
Add \$2.50 shipping & handling.  
Dealer Inquiries.

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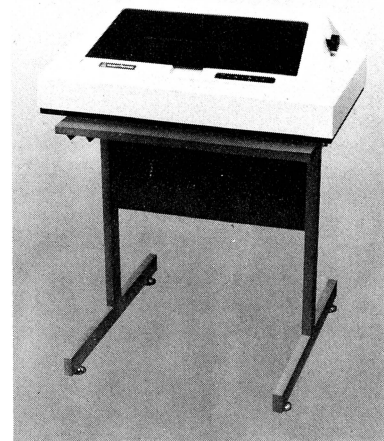
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301/856-2280



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Instructional Tapes

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Anadex  
9825 De Soto Avenue  
Chatsworth, CA 91311  
(213) 998-8010



Full graphics capability with various dot densities and multiple letter quality character fonts are now available on the **Tally MT 1800** multifunction printer. It is a full sized, high duty cycle matrix printer designed for small business systems with large print runs. Another enhancement is a further reduction in noise level to 52 dbA. Offers letter quality printing at 50 cps and high speed draft printing at 200 cps. With the new multiple character set feature, the user has access to two different resident letter quality fonts. Additional fonts are available in kit form. A graphics option offers three different dot densities to achieve different screen dump sizes and tone gradations from gray to solid black. Snap-in cartridge ribbon replacement and operator replaceable print head. \$1995.00.

Mannesmann Tally  
8301 S. 180th  
Kent, WA 98032  
(206) 251-5524



The **JDL P700** dot matrix impact printer performs at speeds above 70 cps for letter quality printing, at 145 cps for high speed data processing printing, and 400 cps for skipping blank spaces. Exceptional resolution is achieved by a 24 dot matrix print head. Smooth flowing curved lines, angular lines, bar graphs, flow charts, block charts,



and timing charts are created with ease by advanced logic seeking. Also standard are more than 3 character sets, including 96 ASCII; ruled line generator; the ability to use 3 different character sizes; RS 232 and Centronics interface. In addition to friction feed, JDL-P700 accepts up to 250 single sheets for automatic feed.  
Pacific Technology Services, Inc.  
332 Pine Street, Suite 610  
San Francisco, CA 94104  
(415) 956-3926

The new **Transtar 130 daisy wheel printer** generates a full-page letter in 36 seconds. The least expensive 40 cps printer does it in 78 seconds. Shannon-text rated at 16cps, the Transtar 130 gives better printing quality than any 40 cps printer. It allows you the full range of word processing functions such as proportional spacing, superscript, subscript, underscoring and a true bold-face. It is also very quiet running at 65dB. Features include a unique autoloader feature that automatically loads paper to one of four pre-selected positions with the touch of a button. The warranty runs a full six months. \$895.  
Transtar  
Box C-96975  
Bellevue, WA 98009

## Miscellaneous

**Touch Mat** sits on the table directly under your computer, within easy reach of your hands and fingers. To discharge static from your body, simply touch the mat before turning on the computer, and then periodically during operation. Discharging takes less than a second, does not produce a spark, and is absolutely assured by simply touching the mat. Available in beige, 24 x 26 inches. \$89.00.  
Computerware Inc.  
315 South Third Street  
Stillwater, MN 56082  
(612) 430-2060 (MN); (800) 328-0223

The **CP/M Card** plugs CP/M Plus into your Apple. It gives you the option of running your Apple II with Z-80 CP/M compatible software. You plug in the CP/M Card, then choose CP/M or your standard Apple software at your option. Use such business programs as WordStar, SuperCalc, Condor, and other high-performance software, yet you still have access to your present library of Apple software. Co-designed by ALS and Digital Research, the creators of CP/M. Includes 64K of on-board memory, CP/M Plus, CBASIC, GSX-80 and full documentation for \$399.00.

Advanced Logic Systems  
1195 East Arques Avenue  
Sunnyvale, CA 94086  
(408) 730-0306 (CA); (800) 538-8177

The **Modem II** makes data communications from your Apple II or II Plus easy on

even a "bare bones" computer. User prompts are found at all levels of command entry. Keyboard dialing makes communication at 110 or 300 bps simple. Compatible with other smart modems and Bell 103-type equipment, the Modem II is crystal controlled, needs no serial interface card, provides auto-dial and auto-answer and has a built-in speaker to monitor call progress. The Multi-Modem II runs at 1200 bps with the same features.  
Multi-Tech Systems, Inc.  
82 Second Avenue, SE  
New Brighton, MN 55112  
(612) 631-3550

**Z-80 Plus microprocessor** on an Apple peripheral card is totally compatible with all

CP/M software. It executes the full Z-80, 8080 and 8085 instruction set. Runs: dBase II, Wordstar, Spell Star, COBOL-80, FORTRAN-80, Peachtree and all other CP/M based software. Fully compatible with Microsoft disks (no pre-boot required). Supports Z-80 interrupts. An on-card ROM eliminates many ICs for a cooler, less power-consuming board. Complete documentation included (user must furnish software). The high quality printed circuit board has gold plated contacts with Mil. Spec. components used throughout. Comes with a two year warranty. \$139.00.  
Applied Engineering  
P.O. Box 470301  
Dallas, TX 75247  
(214) 492-2027

• A P P L E •

# Communication Software

## ASCII EXPRESS "THE PROFESSIONAL"



Valuable subscription benefits to "THE SOURCE" BRS/After Dark and Delphi with purchase of ASCII EXPRESS "THE PROFESSIONAL"

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You can use ASCII EXPRESS "The Professional" the first day you buy it. You can display Command and Help menus at any time. And, as your communications needs grow, ASCII EXPRESS "The Professional" grows with you.

For Apple communications, call on the pro, ASCII EXPRESS "The Professional."

Suggested Price: **\$129.95** plus \$2.50 shipping  
CA res. add 6% Sales Tax  
\*Also Apple //+ and //e compatible

For more information call or write:

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Apple, Apple //, Apple //+ and Apple //e are trademarks of Apple Computer, Inc.  
"THE SOURCE" is a service mark of Source Telecomputing Corporation.



The **Switch-A-Slot** connects to any peripheral slot of the Apple II, Apple ///, or Franklin series of computers. The user can plug up to four cards in the Switch-A-Slot. The desired card is chosen by using a switch on the front and only the selected card draws power. This product is suitable for most peripheral cards. It is perfect for selecting between different printer cards. Saves wear and tear on delicate connectors - all connectors are gold plated for reliability. \$179.50.

Southern California Research Group  
P.O. Box 2231-S  
Goleta, CA 93118  
(805) 685-1931

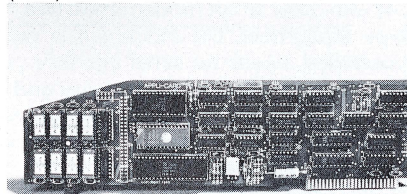
The **Accelerator II** will make your Apple II run 3.6 times faster with VisiCalc, DB Master, Applesoft, Apple Fortran, Pascal, and much more. Eliminate long delays in recalculating VisiCalc models, etc. It is based on a fast 6502 processor with 64K of high speed memory. Includes built-in fast Language card. Hardware compatible with all standard peripherals. Transparent operation with Apple II software. Special pre-boot diskette included to run Applesoft, Pascal, and Integer BASIC from high-speed RAM. \$599.

Saturn Systems, Inc.  
P.O. Box 8050  
Ann Arbor, MI 48107  
(313) 973-8422

The **Key** is a hardware module to protect software from unauthorized use. The Key is factory programmed with a security code. Each software supplier can have a code known only to them. The software supplier provides the software package to the end-user with The Key included. The end-user is free to make as many back-up copies as needed, but can run them only if The Key is installed. The Standard version is designed for low cost software and a High Security version increases the level of protection. STAFF Computer Technology Corp  
10457 Roselle St. #J  
San Diego, CA 92121  
(619) 453-0303

**Appli-Card** is the only one-card solution to running CP/M applications on an Apple computer. It supports all standard Apple peripherals and is fully compatible with the //e. Features include: 64K on board memory, 40-255 column horizontal scrolling, 70 column Hi-Res screen, and choice of either a 4Mhz or 6Mhz Z-80 processor. By utilizing the on-board memory, the Appli-Card is able to execute CP/M programs 2 to 3 times faster than standard Z80 cards which are required to use the Apple's memory. A RAM extender option plugs into the card and functions as either a 128K or 192K RAM disk for Apple DOS or a 64K or 128K RAM disk for CP/M. 4Mhz Appli-Card with Appli-Disc software \$295.00, 4Mhz Appli-Card with 64K RAM extender and 128K Appli-Disc software \$395.00.

Personal Computer Products, Inc.  
16776 Bernardo Center Drive  
San Diego, CA 92128  
(619) 485-8411

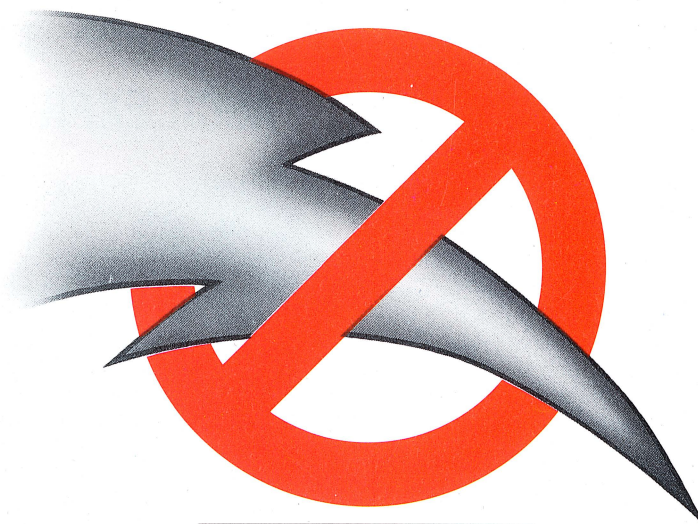


A new **graphics projector** that provides a real-time large-screen display of alphanumeric and graphic images utilizes a device called a liquid crystal light valve to intensify the image from a cathode ray tube and project it onto a display up to 12 feet wide. It provides a combination of high brightness and high resolution not found in conventional projection cathode-ray tube equip-

ment. The new projector, designated the Series 700, can display computer-generated alphanumerics, symbols and graphics in raster scan format. The high light output display gives a bright image even in high ambient light areas, thus eliminating the need for a darkened viewing room. Resolution exceeds 1,000 TV lines per raster height. The projection distance is variable depending on choice of lenses, and the instrument can be used for either front or rear projection.

Hughes Aircraft Company, Industrial Prod. Div.  
6155 El Camino Real  
Carlsbad, CA 92008  
(619) 438-9191

**Summa 300** is a single slot, 300-baud direct-connect modem designed for Apple II computers. It is completely self-contained, combining modem and communications circuitry on one card, and provides tele-



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Super Fan II's Zener Ray™ Transient Voltage Suppressor and Power Filter squelches spikes up to 6000 amps - even those caused by lightning - while responding up to 100 times faster than Apple II's

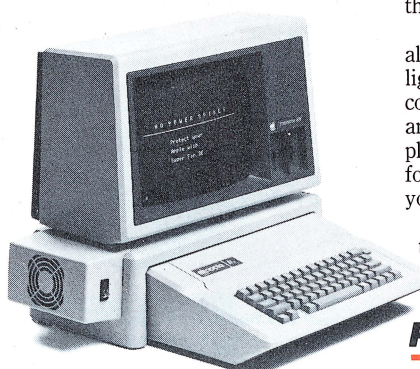
built-in suppressor.

In addition, Super Fan II cools your Apple, removing heat buildup at a remarkable 17 cubic feet of air per minute. Yet it's the quietest fan of its kind on the market.

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**RHELECTRONICS, INC.**



Super Fan II, in black or tan: \$109.  
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Dealer/OEM inquiries invited.  
\*U.S. Patent #D268283  
#4383286

France, call B.I.P. 1-255-4463  
Australia, call Imagineering (02)212-1411



phone connection to computer data bases without the need for additional peripherals or software. It requires no external power source. It is compatible with any communications software using a standard communications interface, and is FCC approved for direct connection to any modular phone jack. It can operate at either 300 or 110 baud in full or half duplex with simple software commands. A carrier detect lamp glows to inform the user when contact with the other party has been made. \$119.00. Zoom Telephonics, Inc.  
207 South Street  
Boston, MA 02111

A low cost, anti-static device is now available. The product, called **WattsOut**, prominently featuring the words "Touch Me" on its face, is only 2x3 inches. When users place it on their equipment, attach it to a ground, and touch it before touching the keyboard, static electricity that can cause

incorrect data entry, circuit damage and memory loss is drawn harmlessly away. \$9.95.

WattsOut, Inc.  
2020 S. Oneida #201  
Denver, CO 80224  
(303) 759-3880



**VisiCalc Expand Gold Pack** gives users an 80 x 24 display and up to 145K for models. Includes either 32K (\$448.00), 64K (\$576.00)

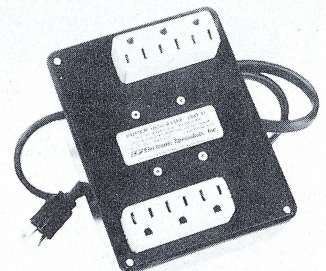
or 128K (\$720.00) RAM card, an 80 column card (which is fully compatible with other Apple software including Wordstar, Applewriter II, Pascal, CP/M) and Versa VisiCalc Expand software.  
U-Microcomputers Inc.  
300 Broad Street  
Stamford, CT 06092  
(203) 359-4236

The **Premium SoftCard //e** fits into the video slot of the Apple //e and will essentially double many of the standard features of this new 8-bit personal computer. It is Z-80 based and comes with the CP/M 80 operating system. The card features 64K of random access memory. In addition, the card allows for an 80 column display, important when implementing professional spreadsheet and word processing applications programs. Also included are two versions of Microsoft's BASIC language interpreter with special statements designed to support Apple graphics. Complete with 400 pages of documentation including CP/M and Microsoft BASIC Quick Reference Guides, and the Osborne tutorial on CP/M. \$495.00.

Microsoft Corporation  
10700 Northup Way  
Bellevue, WA 98004  
(206) 828-8080

The **Model ISO-11 Super Isolator** controls severe electrical problems in your power line. Severe AC power line spikes, surges and hash are prevalent in many microprocessor installations. Program execution is plagued with unexplained crashes, memory loss or other glitches. Disk, printer and processor often interact, aggravating the problem. ISO-11 features two individually dual-Pi filtered AC socket banks (6 sockets total). Heavy-duty spike/surge suppression. Equipment interactions are eliminated, disruptive or damaging line spikes and hash are controlled, and programs operate more smoothly. \$115.95.

Electronic Specialists, Inc.  
171 South Main Street  
P.O. Box 389  
Natick, MA 01760  
(617) 655-1532



**System Saver** is a power control and protection accessory that uses fundamentally the same circuitry time-proven in surge suppression designs for radios, televisions and communications equipment. It sup-

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Guardian Angel\*, with LED power status indicator, automatically safeguards data from blackouts, brownouts for just \$595.

**RHELECTRONICS, INC.**

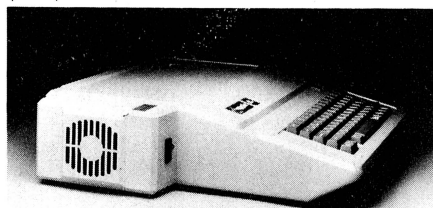
\*Patents pending. UL listed, FCC approved, 240V/50 Hz version available. Dealers and OEM inquiries invited.

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Angel.™



presses power line surges, and cleans up hash, radio frequency noise and interference that commonly appear on power lines. Replaces the Apple power cord, providing simultaneous control and protection to the Apple computer itself, to one or two accessories plugged into auxiliary outlets (rated at 8 Amps total) on the back of the case, and to its built-in cooling fan. With illuminated heavy duty rocker switch (rated at 9 Amps). \$89.95.

Kensington Microware Ltd.  
919 Third Avenue  
New York, NY 10022  
(212) 486-7707



## SOFTWARE

### Business (General)

**Datamate 103** intelligent auto-dialing full duplex modem with a slim-line telephone

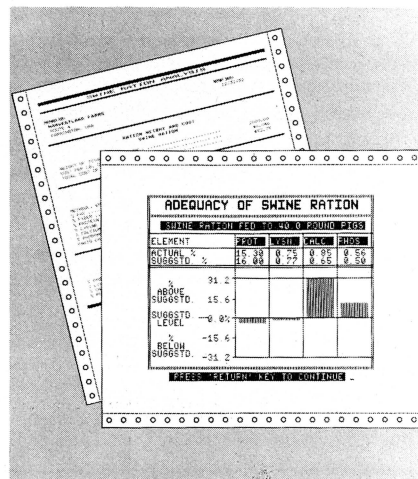
receiver gives the user the choice of communicating by voice or by modem via a data terminal. Phone calls can be made even when the modem is turned off because the phone receives power from the telephone line. The modem-phone stores the last voice number dialed and the 300 baud modem stores the last data number. Additionally, the modem's non-volatile memory holds six other frequently called numbers to aid in speed dialing. The modem provides such advanced dialing procedures as last number dialed, immediate dialing, dial from memory, and dial until answered in either a tone or pulse-type dialing method \$295.00

Cermetek Microelectronics  
1308 Borregas Avenue  
Sunnyvale, CA 94086  
(408) 734-8150

**Swine Management Series One** for both small and large hog producers provides the helpful program hog producers need for operation analysis. Data analysis through the swine management program can provide the managerial edge needed for maximum profitability. The program does away with the large number of worksheets and hours of figuring with paper, pencil and pocket calculator. Includes swine ration analysis, feeder pig analysis, hog selling

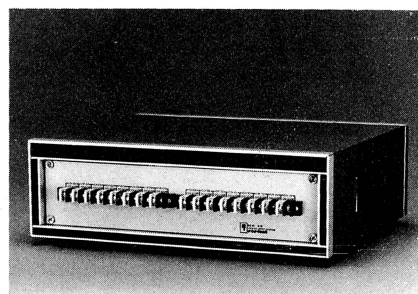
decisions and sow productivity calculator. \$140.00.

Harris Technical Systems, Inc.  
624 Peach Street  
Lincoln, NE 68508  
(402) 476-2811



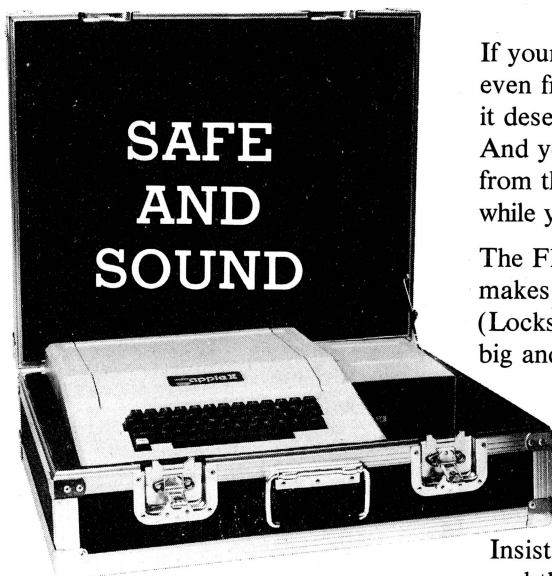
**ALIS instrumentation and control systems** for the Apple II simplify laboratory and industrial automation. BASIC software runs up to 10,000 samples/second. Tutorial documentation, model programs and a complete graphing system ease application set up. Four models provide 16 channels of 12-bit analog input (\$1517) or 8-bit analog input (\$1149) two to eight channels of 8-bit analog output (\$841) or 32 TTL I/O channels with four auxiliary counters and seven external interrupts (\$1600).

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(517) 337-9226



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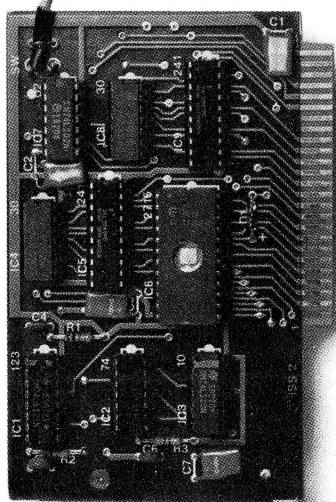
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Software is not copy protected. System requirements: Apple II Plus with 64K and DOS 3.3 or Apple IIe. Franklin Ace also supported.

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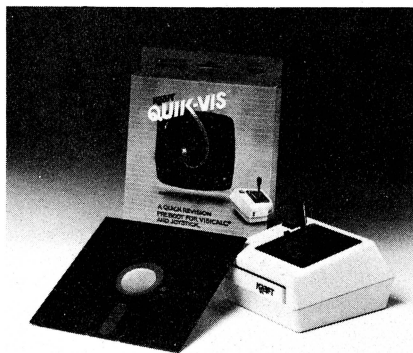
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**Quik-Vis** is a quick-revision subroutine that adds joystick control to VisiCalc. When prebooted prior to the Apple version of VisiCalc, Quik-Vis allows the user to move the cursor anywhere on the spreadsheet by means of a Kraft joystick. Four to six separate procedures required to move the cursor are thereby eliminated. The fast cursor movement saves time when updating entries, reviewing spreadsheets, and adjusting data. The two buttons move the cursor immediately back to A1 and give extra-fast cursor speed, respectively.  
Kraft Systems Company  
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Vista, CA 92083  
(619) 724-7146



The **Aviation Manager** is a complete integrated software package with General Ledger, Accounts Receivable and Payable with Invoice Entry and Billing, Airport Lookup with Flight Quotations, Pilot and Aircraft ID, Pilot

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Mini Business Systems, Inc.  
17697 Ten Mile Road  
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(313) 552-1044


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**Graph 'n' Calc** business graphics and statistical analysis package is now available for the Apple ///. This new version, which supports the Apple /// ProFile hard disk allows users to quickly prepare a variety of stacked and side-by-side bar charts, line charts, pie charts, and combined line and bar charts. Any number of charts can be stored on a diskette and later displayed in any sequence. Hard copy production of graphs can be accomplished with any Epson MX-series printer with the GRAFTRAX option, Apple dot matrix printer or the new, low-cost Hewlett-Packard 7470 or Strobe Model 100 color pen plotters. Includes a set of commonly used statistical and financial calculations and provides full Data Interchange Format for other programs using the same format (VisiCalc, Desktop Plan, Financial Analyst, etc.). Disk may be backed up and program and data files may be transferred to the ProFile. Written in the Apple SOS environment with Apple Business BASIC, advanced users may integrate their own subroutines and formulae. Requires 256K RAM, a single floppy disk drive, and a monochrome video display. \$249.00.  
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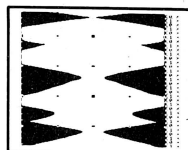
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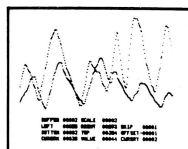
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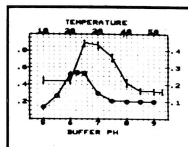
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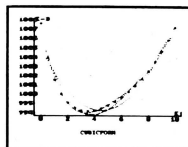


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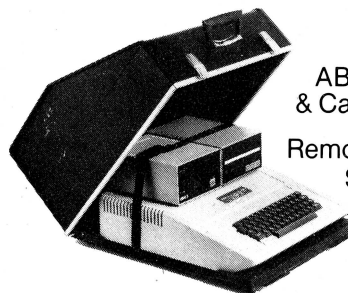
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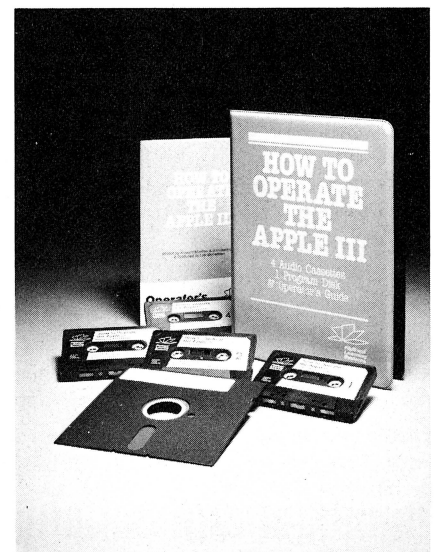
**The Leprechaun** is Notre Dame's electronic bulletin board, which can be accessed from any ASCII-type terminal such as the Apple. The purpose of the board is to provide a public service for the academic community by allowing the posting of bulletins which can be read by all users of the system, or the sending of electronic mail which can be read only by the individual to whom the mail is addressed. Each user of the system is given a password when he/she uses the system for the first time. The system can be reached by dialing (219) 239-5875 at any time 24 hours a day. The system is provided by the office of the Assistant Provost for Computing and the **Byteing Irish Apple users group**. There is no charge for the service.  
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## Educational

The **VisiCalc Audio Course** systematically teaches the ins and outs of the powerful VisiCalc electronic spreadsheet program. Tape One: The VisiCalc Beginner introduces the VisiCalc commands. The emphasis is on a practical demonstration of each command using a "hands on" approach. Tape Two: The VisiCalc Functions covers arithmetic, listing, trigonometric, logical, special and nested functions. Tape Three: VisiCalc Templating, will teach you how to design and produce VisiCalc Templates and overlays (spreadsheet models). The course includes a diskette complete with examples, templates, overlays and exercises; a detailed Reference Guide; a rugged

book-like vinyl binder to store and protect your course; and three detailed 90-minute instructional tapes presented in a natural conversational manner. \$49.95.  
Personal Tutor Associates  
P.O. Box 246  
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(301) 856-2280

A new audio cassette tutorial, **How To Operate The Apple ///**, includes four audio cassettes, one program diskette and a fully-indexed Operator's Guide. Designed for the first-time computer user, this "hands-on" cassette course stresses learning by doing - at the learner's own pace, at their convenience and with their computer. An important segment of the program is the lesson on Apple II emulation which was used by Apple Computer, Inc. to train its own field sales representatives. Operators are instructed, in all phases of operation, from set-up through full implementation.  
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whether right or wrong; correct answer highlighted; English translation of original sentence with correction; explanations of incorrect options if desired; encouraging remarks in French (or Spanish); full French (or Spanish) character sets with punctuation, and upper and lower case - \$39.95 through September 1, 1983, \$49.95 thereafter.

Microcomputer Workshops Corp.  
225 Westchester Avenue  
Port Chester, NY 10573

The **VisiCalc Training Videotape** is for career minded executives with personal computers who want to learn VisiCalc easily. Used at work or at home, the tape can be repeated and problem areas reviewed at the touch of a button. The student working at his/her own pace is led through several business applications which reinforces learning. 90-minute videotape can be used with Apple and compatible computers. Formats include VHS, Beta (\$195.00) and 3/4-inch (\$235.00).

Legalvision, Inc.  
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Two new teacher aid programs: **Generic List Generator** alphabetizes and saves typing and retyping lists. On an Epson printer, it will correctly space names for a grade book. The program is written in Applesoft, accessible and well remarked for program changes you might wish to make yourself. It allows selection by a number of individual items (students or whatever) from a main list. The sub lists are printed as library

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**MasterType** consists of seventeen progressive lessons that help students master the typing keyboard at their own rate. It incorporates exciting visual and sound effects that are equivalent to the best video games. The program introduces each row of keys separately, presenting individual keys first, and building up to words. Following each lesson, the user receives a report of the number of words typed per minute and how many words were misspelled or destroyed. A "Make-Lesson" option enables users to create some of their own lessons. Includes a manual. Requires a 48K Apple II with DOS 3.3. \$39.95.

Lightning Software  
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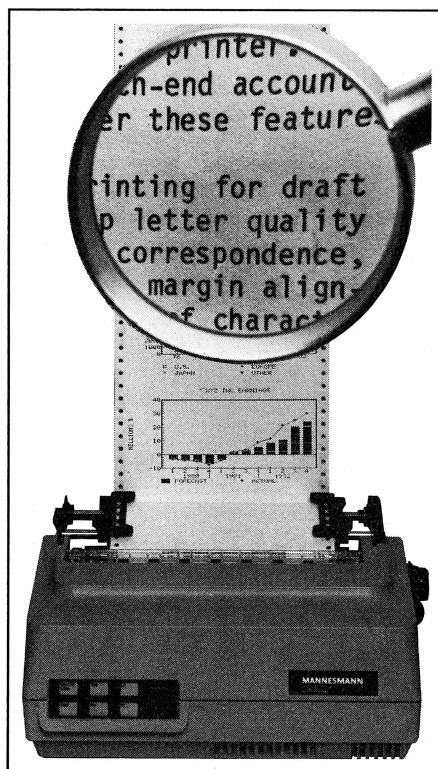
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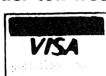
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**Cosmic Balance II-The Strategic Game** is a sequel to the popular tactical space game, **The Cosmic Balance**. This new game traces the expansion of a culture throughout the Galaxy. With fifteen classes of ships, players discover and colonize planets; organize production of supplies, starships, and research; and send starships out on conquest missions. There are five scenarios along with the option to create your own scenario. When actual starship

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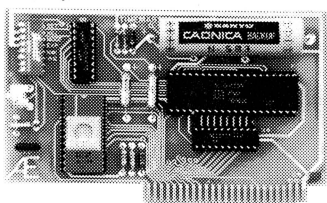


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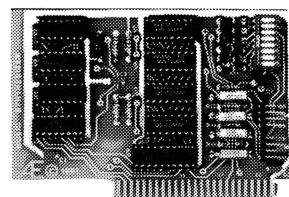
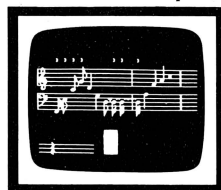
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- Full emulation of most other clocks, including Mountain Hardware's Appletime (but you'll like the TIMEMASTER mode better).
- Compatible with all of Apple's languages, CP/M and PASCAL software on disk.
- Eight software controlled interrupts so you can execute two programs at the same time. (Many examples are included)
- On board timer lets you time any interval up to 48 days long down to the nearest millisecond.

The TIMEMASTER includes a disk with some really fantastic time oriented programs (over 25) plus a DOS dater so it will automatically add the date when disk files are created or modified. This disk is over a \$200.00 value alone — we give the software others sell. All software packages for business, data base management and communications are made to read the TIMEMASTER.

If you want the most powerful and the easiest to use clock for your Apple, you want a TIMEMASTER.

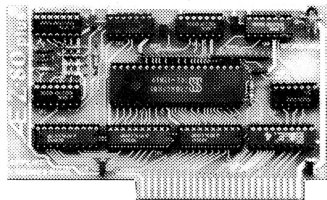
**PRICE \$129.00**

## Super Music Synthesizer



- Complete 16 voice music synthesizer on one card. Just plug it into your Apple, connect the audio cable (supplied) to your stereo, boot the disk supplied and you are ready to input and play songs.
- It's easy to program music with our compose software. You will start right away at inputting your favorite songs. The Hi-Res screen shows what you have entered in standard sheet music format.
- Now with new improved software for the easiest and fastest music input system available anywhere.
- We give you lots of software. In addition to Compose and Play programs, the disk is filled with over 30 songs ready to play.
- Easy to program in Basic to generate complex sound effects. Now your games can have explosions, phaser zaps, train whistles, death cries. You name it, this card can do it.
- Four white noise generators which are great for sound effects.
- Plays music in true stereo as well as true discrete quadraphonic.
- Full control of attack, volume, decay, sustain and release.
- Will play songs written for ALF synthesizer (ALF software will not take advantage of all the features of this board. Their software sounds the same in our synthesizer.)
- Automatic shutoff on power-up or if reset is pushed.
- Many many more features.

**PRICE \$159.00**



## Z-80 PLUS!

- **TOTALLY** compatible with ALL CP/M software.
- Executes the full Z-80 and 8080 instruction set.
- Fully compatible with microsoft disks (no pre-boot required).

- An on-card PROM eliminates many I.C.'s for a cooler, less power consuming board. (We use the Z-80A at a fast 3.58 MHZ)
- Does **EVERYTHING** the other Z-80 boards do, plus Z-80 interrupts.
- All new 1983 design incorporates the latest in I.C. technologies.
- Complete documentation included.

The Z-80 PLUS turns your Apple into a CP/M based computer. This means you can access the largest body of software in existence. Two computers in one and the advantages of both, all at an unbelievably low price.

**COMING SOON:** The Z-80 Plus for the Apple III

**PRICE \$139.00**

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- On Board Memory
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- A/D Process Totally Transparent to Apple (looks like memory)

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Our A/D board comes standard with 0, 10V full scale inputs. These inputs can be changed by the user to 0, -10V, or -5V, +5V or other ranges as needed.

Information on temperature sensors is given in manual.

The user connector has +12 and -12 volts on it so you can power your sensors.

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where wheeling and dealing are the name of the game. Players compete to become the kingpin of the world energy market: an Oil Baron. The game can be played by from one to as many as eight players. Each player begins with four parcels of land and over 1 million dollars. After that, the race is on as players strive to develop the most oil-rich land. Government regulations, windfall taxes, well fires and even hurricanes are among the obstacles the players must face. Comes with a colorful, detailed game board that maps out the many types of terrains to be explored, complete with realistic game pieces to stake out and keep track of territory. \$100.00

EPYX/Automated Simulations  
1043 Kiel Court  
Sunnyvale, CA 94086  
(408) 745-0700

**Knights of the Desert** recreates the North African campaign of WWII in which the British troops held off the sweep of Rommel's Panzer divisions as they moved toward Alexandria. Each Player's objective is to push the opponent as far back along the coast as possible while capturing towns along the way. In solitaire mode, the computer ably directs the British forces. The terrain includes rough areas, mountains, impassable sand, and fortresses. Forces for each side are division/regiment-sized units of infantry, motorized infantry and tanks. Knights of the Desert runs on any Apple II with 48K \$39.95.

Strategic Simulations Inc.  
883 Stierlin Road, Bldg. A-200  
Mountain View, CA 94043-1983  
(415) 964-1353

**Suspended** is a science fiction nightmare that challenges players to save the entire population of a planet in deep space. Players will find a true communication link with the computer. It is also the first game in which you, the player, control multiple characters. In this case, the six characters are robots that are helping you save the entire surface-side population of the planet. These robots truly become manifestations of the player; instead of moving around in a specific environment as in previous games, the six characters can act for you independent of one another. No other game gives you the ability to send characters to different locations and simultaneously make subsequent moves. In your local computer store.

Infocom, Inc.  
55 Wheeler Street  
Cambridge, MA 02138  
(617) 492-1031

## Graphics

**Cadfram** is for the structural analysis of plane frame works. It has been specifically designed for ease of data input and clarity

of output, to give the structural engineer total flexibility and control in performing structural calculations and checks as an integral part of the design process. Performs the analysis of any plane framework of arbitrary geometry on a structure consisting of up to 100 members with each member either rigidly fixed or pinned to the rest of the structure. Input data is divided into three main areas, geometrical, loading and support data each with its own sub-sets which are all entered independently so that they can be stored, recovered and edited independently as well. Types include single or multi-bay portals, multi-bay and multi-story rigid frames, braced frames, continuous beams, sub-frames, lattice girders and trusses. Its powerful post processor will automatically extract, for up to 20 load combinations at a time, the bending moment and shear force envelopes for any, or all, of the members and print out these worst case values in both tabular and graphic form.

PM International  
P.O. Box 87  
Buckfield, ME 04220  
(207) 336-2500

## Languages (Programming)

**Structured BASIC** for the Apple II and //e is a true interpreter which has all the benefits of Pascal plus many other features. It runs all existing Applesoft programs and uses DOS 3.3 as its operating system. Subroutines are called by name as with Pascal - no line references needed. Structured commands are supported: Repeat . . Until, While . . Endwhile, For . . Next, If . . Then . . Else . . Endif and many, many more features such as procedure overlaying and local variables. \$135.00.

U-Microcomputers Inc.  
300 Broad Street  
Stamford, CT 06091  
(203) 359-4236 (CT) (800) 243-2475

**MacroSoft** lets the programmer write Applesoft-like programs which are converted directly into machine language. The resulting programs are up to 50X faster than Applesoft, 25X faster than Integer BASIC and up to 10X faster than compiled Applesoft. It gives the advanced programmer the convenience of mixing assembly language and MacroSoft in the same program. Adds new commands: IF-THEN-ELSE, REPEAT-UNTIL, HSCRN, BUTTON, SOUND, WHILE-WHILEN and more. Requires an Apple II or //e, 48K and one disk drive and The Assembler. Both MacroSoft and The Assembler are heavily documented with an 80 page and 130 page user manual respectively. Package price is \$99.95. MicroSPARC, Inc.

P.O. Box 639  
Ten Lewis Street  
Lincoln, MA 01773  
(617) 259-9710

The **ST-M8 Smalltalk dialect**, similar to Smalltalk-80, is offered as entry point to the world of object-oriented programming on popular low-cost systems (Apple, Basis 108, etc.). It incorporates the window/mouse user interface and the general features of Smalltalk, including its extensibility. The basic Smalltalk classes (on the system level) are largely machine-coded for efficiency and thus not modifiable. The process-scheduling (multi-tasking) and block-based control structures are implemented. ST-M8 is functionally similar to the Xerox Smalltalk System and useful for applications as well as learning and systems modelling. Uses an 80 x 24 display. Cursor control is switchable between designated keyboard keys, game controls and graphics tablets. Built-in extensions support generalized application areas such as word-processing, relational data bases and electronic spreadsheet presentation forms. Minimum system requires 256Kb RAM via pseudo-floppy cards) and one or more floppy drives. Optionally, popular hard disc models, mouse devices, printers with standard interfaces as well as network interfaces will be supported. ST-M8 is priced as \$580, with assembly-coding interface at \$780. Sale is on a licensing basis, including warranty and support in the USA and Europe.

C.J. Macie - Software Systems  
1255 Post Street  
Suite 625, Box 138  
San Francisco, CA 94109

## Personal

**Golf League Statistics** is a fully automated system to manage analyze and print records for an Industrial or School Golf League up to 20 teams and 50 players, with minimal effort. Automatic team scheduling, tee-off order, player standings, handicap system, course records by player and course, equitable stroke adjustment and computed match play points in addition to over 100 individual team/player characteristics maintained - most recent and average points, putts, scores, net, average opponent, player record and much more \$139.95. Requires a 48K Apple with DOS 3.3 and Epson or equivalent printer.

Disk Depot  
731 W. Colorado Avenue  
Colorado Springs, CO 80905  
(303) 473-7777

**The Family Connection** provides high-quality genealogical software primarily directed at both the novice and veteran family historian who needs help in organizing and maintaining their family trees. The program boasts ease of use, as well as a large record capacity. The user may generate a number of reports, including pedigree charts, family group sheets, record indices, and numerous user-defined reports \$99.50. Requires any Apple II, 48K of memory and two disk



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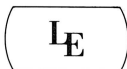
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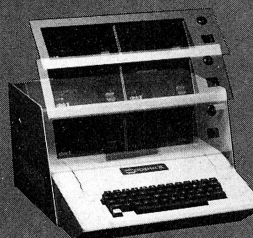
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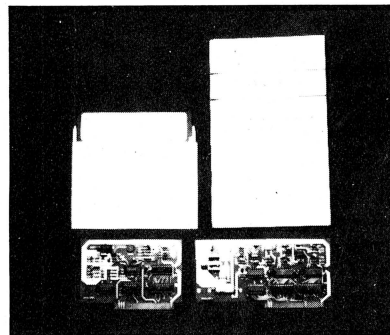
Now you can playback digitally recorded sounds and modify them under computer control! DX-1 is capable of producing percussion sounds (drums-cymbals), music sounds, electronic sounds and many other miscellaneous sounds. Complete software is included in an easy "MENU" driven format.

DX-1 comes with two P.C. boards, software on diskette and complete documentation. You can also enter your own sounds and save them on diskette. Enter your voice and play it back faster, slower, in reverse, or even in random ways!

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Package



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drives. A printer is recommended, but not necessary.

Discovery Software  
P.O. Box 68821  
Indianapolis, IN 46268  
(317) 291-1433

The **Reminder Calendar** is an electronic date book and monthly, yearly planner for your Apple. It's quick and easy to use and will appeal to everyone from businessmen to housewives. Plan your days in just seconds, plan a whole year in just minutes. The monthly reminders show up a few days before they're due (perfect for payments) and the yearly reminders come up a week ahead of time. All holidays are already in and it will tell you the week day for any future date in less than a second. Run it once a day and it will automatically give the correct date and day of the year number for all days. \$24.95.

Soft-Byte Computer Programs  
P.O. Box 5701 Forest Park  
Dayton, OH 45405

**Diet!** will make your computer more popular than your refrigerator. Selected features include: your ideal weight and calories needed to maintain your ideal weight; effect of exercise on weight loss; weight charts kept for twelve weeks for everyone in the family; insults or compliments (your choice) about your weight change. Visual prompts, anytime review of directories, and 'no calorie' menus make this program especially easy to use. \$15.95.

Hallie Software  
Box 4383  
Auburn Heights, MI 48057

The **Home Controller** is a new software package that allows you to control your BSR system via your Apple II, clock card, and BSR interface. Features automatic calculation of sunset and sunrise, a recovery mode in case of power failures, supports all BSR commands, daylight savings parameter, a special "test time" so you can test your schedule in a fraction of normal time. Takes full advantage of Upper/Lower case chip or 80 column card, status screen, help screens, and much more. With the standard version you can have up to 50 events in your schedule and with the advanced version you can have up to 100 events with your own logic. Requires a Thunderclock, Versacard, Mountain Computer Clock, or a Mountain Computer CPS - \$69.95 for the advanced version and \$49.95 for the standard version.

Simple Software Systems  
P.O. Box 41069  
San Jose, CA 95160

## Utilities

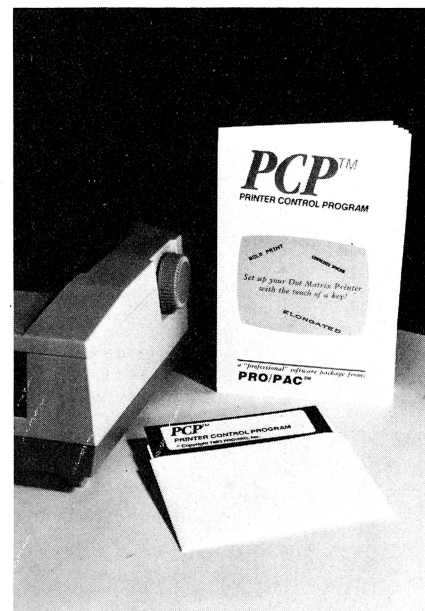
**Sphinx** is the new encryption software that's designed to keep snoopers out of your data. Encrypting power up to 10 to the 25th power is available in hardware costing

close to \$1000. However, Sphinx generates an encrypting power enormously above 10 to the 400th power in less than a minute at the keyboard, at a fraction of the cost. Your data becomes impenetrable and uncrackable, even in theory. Requires 48K with Applesoft in ROM, single disk drive. Complete with backup disk for \$37.50 plus \$2.50 for shipping and handling.

Crane Hill-ST  
P.O. Box 273  
Gonzalez, FL 32560

**Printer Control Program (PCP)** allows microcomputer users to set up their dot matrix printer to print in bold faced type, compressed characters, variable line spacing, slashed zeros, elongated characters and other modes. The program eliminates the need to enter long strings of printer control codes in order to change printing modes. Completely menu driven, the program will send printer control codes at the touch of a key. Included with the program is a fully typeset Operating Manual explaining in detail how to use the program. It also includes instructions on programming the printer in BASIC, and other programs such as Apple Writer and VisiCalc. Available for Apple, Epson-80/100, and IBM printers on any Apple computer \$24.95 plus \$2.00 for shipping and handling.

Pro/Pac  
14925 Memorial Drive, Suite 105  
Houston, TX 77079  
(713) 496-1179



A new **file transfer program** allows the transfer of files from Apple II computers to the IBM PC and XT computers. Included in the new product is a communications program for the IBM PC and Apple as well as an adapter that allows the two systems to connect. The program contains several useful utilities that assist in program conversion and can aid in the preparation of files for editing. The program supports the



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**"Thank you,  
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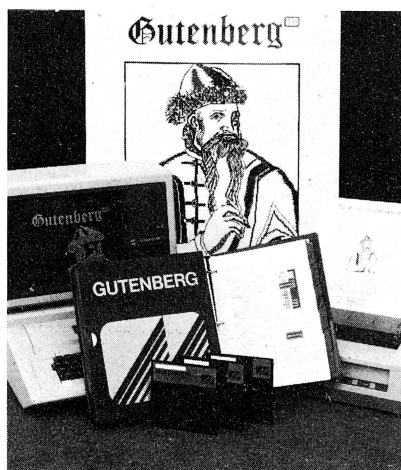
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 1400 Coleman Avenue Suite C-18  
 Santa Clara, CA 95050  
 (408) 988-0164

## Word Processing

**Gutenberg** is a user-friendly word processor particularly suited to creation of text but also useful for secretarial work. Permits use of 125 user-definable special characters-technical symbols; non-English characters; ornaments, etc. You may also incorporate graphics pictures in the text including mathematical equations, logs, or even portraits. Formats permit multiple columns, shaped paragraphs, complex tabulations, and multiple levels of indentation. Includes standard word processing commands such as global search and replace with 8 different masks and counter, programmable keyboard for mass data capturing and high or low resolution editing modes. Proportional print is also available. Does not

requires an 80-column board or lower-case adapter. Supports the following printers: Apple, Centronics 737 & 739, Epson.MX-80 or MX-100 with Grafrax-Plus, NEC 8023A-C, C. Itoh Prowriter, C.Itoh 8510 & F-10, Qume Sprint 5/45 & 9/45 and others are being added continuously. \$325.00 suggested retail. Requires a 48K Apple with shift-key modification, DOS 3.3 with one drive and a monitor.  
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Print, underlining, double strike, over print, headers, footers, page numbering, imbedded control characters, word wrap, right justification, centering, adjustable margins and tabs, find and replace, block movement, and more. \$185.

Foxware Products  
 165 West Mead Avenue  
 Salt Lake City, UT 84101  
 (801) 364-0394

**Format II Enhanced Version** word processing software now includes a built-in "form letter" data base manager for Apple II Plus, Apple //e, Franklin and workalike computers. The result is a powerful word processing system that permits extremely flexible form letter preparation, label printing and more. The data base manager in Format II Enhanced Version uses the familiar label-for-variable swapping technique. Whenever a particular word or set of characters (for example, \$NAME or ##UNITS) is encountered in the text file that serves as a base document the program checks its data base for information corresponding to that same label. This information is substituted for the label in the base document (the label is not itself printed) as the document is printed. Hard disk compatible, it also supports advanced printer functions and creates standard DOS 3.3 TEXT files. \$150.

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919 Third Avenue  
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## APPLE CPM UTILITY PAK #1

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Nine terrific CP/MUG utilities adapted specifically for Apple II CP/M! Includes:

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Six programs to transfer and reformat any file among the Apple DOS, CP/M, and Pascal operating system environments. Conveniently allows use of a single disc to contain files for all three systems.

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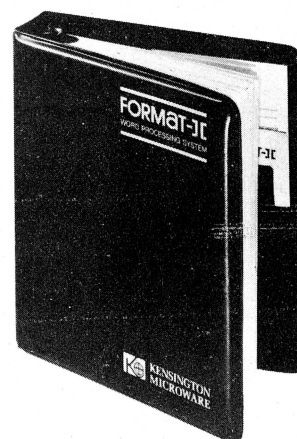
**RCM SOFTWARE**  
 R. D. 2 Morgan Manor  
 New Concord, Ohio 43762

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The new **Sensible Speller IV** corrects spelling mistakes immediately and has the Random House Dictionary of over 80,000 words. Immediately correct misspelled words by replacing them with the proper spelling. It even suggests the correct spelling for your mistakes. Options for searching the dictionary, including multiple-character and single-character substitutions. The official Black's Legal Dictionary is now available for \$99.95; others will be available soon. Contains multiple versions for compatibility with almost all Apple word processors including DOS 3.2, 3.3 (AppleWriter, Magic Window, ScreenWriter, etc.), CP/M (Wordstar, etc.) and Pascal word processors. Works on all Apple II series and Apple-compatible computers with one or two disk drives. Includes a backup disk, a main dictionary disk, a supplementary dictionary disk, and a free Concise Edition hard cover Random House Dictionary. \$125.

Sensible Software, Inc.  
 6619 Perham Drive  
 West Bloomfield, MI 48033  
 (313) 399-8877

**Ink Well Version 2.2** has big advantages for word processing on the Apple ///. Ink Well displays your document on the screen just as it will be printed. You can format your documents on the screen, and know exactly how they will look on paper. Ink Well even shows you where the page breaks will fall. It also features a Typewriter Mode, Merge



**TED** is a new text editor and file clerk for the Apple II Plus. 15 menus make it user-friendly and easy to use. Full screen editing creates and modifies text files. Allows 80 column editing without additional hardware. 22 pushbutton commands provide editing in a keystroke. A stick-on strip makes remembering commands easy. Merge and transfers files between disks. Transforms DOS commands into one keystroke and allows 8,000 more characters



A decorative horizontal row of ten identical orange apples, each with a small green leaf, arranged in a slightly wavy line across the width of the page.

# Apple Orchard

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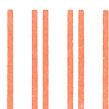
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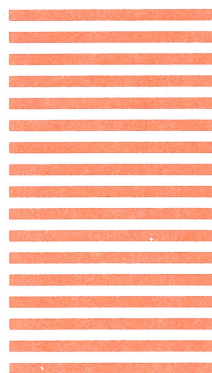
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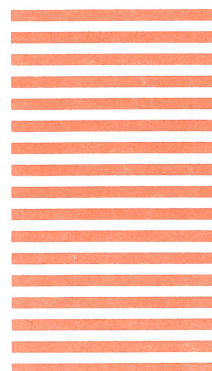


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**Moore 1983 Summer/Fall Computer Forms and Supplies Catalog** carries the most complete line of computer forms and supplies with more than 350 new products. They carry such necessities as continuous labels, ribbons and printwheels, computer forms, magnetic media, cables and switches, programmer's aids, furniture and storage items and word processing supplies. Moore Business Centers  
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**Advanced Computer Products catalog** for 1983 will fulfill your every need. A partial index features Apple II and //e software and hardware, resistor networks, logic probes, handheld computers, disks, fans, diskettes, software, supplies, switches, heatsinks, EZ circuits, crystals, cables, S-100 equipment, transformers, wirewrap wire, etc.  
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**Music Programs for the Apple Computer** is a comprehensive directory of computer-assisted instructional materials for music education. It provides 26 pages of information about software and hardware currently available for use today with Apple II computers. Currently includes 123 software programs with titles, descriptions, additional hardware needed (if any), list prices, suppliers and sources; 13 hardware systems; 46 suppliers and 18 other sources of information. Copies of this directory are available for \$5.00 each, including first-class shipping. Quantity discounts available.  
Denis C. Moreen  
College of Notre Dame  
Belmont, CA 94002  
(415) 861-2871

**VisiCalc: Home and Office Companion** presents a series of easy, "hands-on" lessons that introduce users to the VisiCalc program's format and many versatile commands. By following the numerous exercises and examples in the book, even first-time users of VisiCalc programs will be able to achieve professional results. Sections include basic skills needed to build a work sheet, the commands that are used to

change and edit and advanced uses and special tricks that extend the capabilities of the programs. This book has been carefully organized so that users can quickly cite a specific command or function for immediate reference. 200 pages, \$12.95.  
Osborne/McGraw-Hill  
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**Doing Business with SuperCalc** is a guide to using the popular and powerful electronic spreadsheet for common business calculations. It includes over forty applications for accounting and management planning - from financial statements to master budgets; from pricing models to investment strategies. Each application is thoroughly described and a complete program for setting up the applications in SuperCalc is presented. All of the programs can be easily modified to fit each user's

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The Vocational Studies Center, University of Wisconsin-Madison has published two handbooks on microcomputers. The first is *Microcomputers: Applications in Vocational Education*. The second is titled *Microcomputers: Applications in Career Counseling and Career Education*. Both books contain papers written by experts specifically for the handbooks. Each book sells for \$30.00

Publications Office  
Wisconsin Vocational Studies Center  
964 Educational Science Building  
1025 W. Johnson Street  
Madison, WI 53706

*Family Computing*, a monthly magazine, is the first major consumer magazine to be published by Scholastic, a company that for over six decades has published high-quality, timely educational materials for all areas of learning for both schools and the home. People urgently need practical, easily understandable information on how to use computers for learning and fun on a day-to-day basis. It will form a link with their children's in-school computer-related instruction as well. Annual subscription rate is \$17.95 or \$27.97 for two years.

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*Computer Comparisons* contains more than 100 pages of valuable information about how to compare, evaluate and purchase a computer system for business applications. It includes concise, easy-to-use summary charts which show the important features and operating specifications of over 300 models of minicomputers and microcomputers. Each description includes the type of standard operating software that the system will support. A complete new book, with updated information,

is sent to subscribers each quarter. Compares single-user systems up to 10-user, 3-printer systems. Annual subscription is \$120.00, semi-annual is \$80.00 and a single issue is \$50.00.

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*LIST* is a new 404 page software resource book, divided into two sections: a "how-to" section comprised of over thirty articles and the Software Locator complete with over 3,000 personal computer software applications indexed by industry, application, hardware, and operating system environment (over 700 for the Apple and almost 800 for CP/M compatible systems) - \$12.50.

Redgate Publishing Company  
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Everyone who uses Apple Writer II can use the book *Minute Manual For Apple Writer II*. It contains step-by-step instructions for the six basic operating procedures: initializing disks, typing text, saving text, loading text, editing text, and printing text. The 100 page manual also includes instructions for print formatting, mailing lists and form letters, tabs, glossary files and even procedures not described in the Apple Writer II manual like Print Preview. Includes chapters on Epson printing commands, word processing on a microcomputer, and enhancing your Apple II plus to provide 80-column display, upper and lower case, extra memory, shift key modification, spelling checker program, etc. \$5.95 plus \$1.00 shipping.

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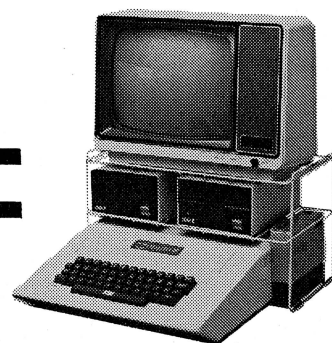
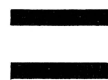
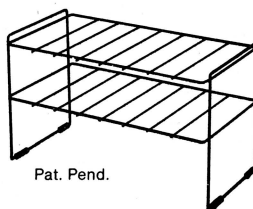
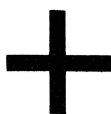
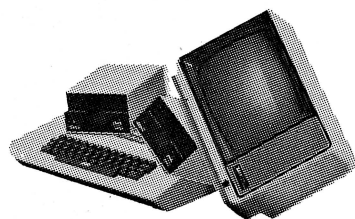
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Imprint Software  
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*The Software Catalog* incorporates unique features into a comprehensive source of reference on software. Includes software/system compatibility information, including available software packages for the upgraded or modified system, microprocessor, language compiler, or other system component. Continuous updating via two editions annually (the first describing more than 20,000 software products) and two intermediate updates will keep you current. Complete cross-referencing makes lookup a snap. Referenced by computer, application, operating system, keywords, vendor, microprocessor, programming language,

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## MISCELLANEOUS

The new catalog from **Bretford Manufacturing** contains, among standard office items, video cabinets and stands. One item, their Slant Bar, can be attached to the front of a video table shelf allowing a video cassette recorder to sit at an angle, providing easier access to the controls on front-loading VCRs. The Slant Bar was originally designed to reduce video equipment glare. Bretford Manufacturing, Inc.  
9715 Soreng Avenue  
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(813) 646-6557

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Howe Furniture Corporation  
155 East 56th Street  
New York, NY 10022



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<b>VIZ-E-EXPAND 80</b>	Adds 80 Column Features to VIZ-E-EXPAND

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The HAL Series of IBM compatible memory boards:  
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The HAL Parallel Printer Cables

The HAL Utility Software Package

### THE VIC-20 and COMMODORE 64

<b>VIM-8/16</b>	8K or 16K Memory Expansion Module
<b>VIM-0</b>	EPROM/RAM User Definable Module
<b>CC-2064</b>	Parallel Printer Cable & Software for the VIC-20/64

### FOR ATARI 400 and 800 COMPUTERS

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<b>ATC-P</b>	Atari Parallel Printer Cable
<b>ATC-S</b>	Atari Serial or Modem Cable

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# MICROTEK

## COMPUTER PRODUCTS

### IF YOU HAVE A GRAPHICS PRINTER YOU MUST HAVE A GRAPHICS INTERFACE.

#### **DUMPLING-GX** GRAPHICS PRINTER INTERFACE

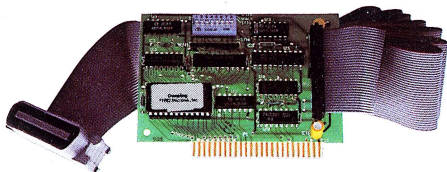
The Dumping-GX is a DIP Switch Selectable Dual Hi-Resolution Graphics Screen Dump parallel interface card for Apple computers and most popular printers.

At the flick of the DIP switch, The **Dumping** will interface with: **APPLE ■ EPSON ■ NEC ■ IDS\* ■ ANADEX ■ C-ITOH ■ PMC ■ CENTRONICS ■ OKIDATA ■ MANNESMANN TALLEY**

Selectable Strobe and Acknowledge polarities allow use with **any** 8-bit parallel printer in text and block graphics mode.

Microtek's proprietary on-board firmware enables the **Dumping-GX** to establish intelligent communication between your Apple computer and your printer. Simple commands allow:

- Selection of your printer by DIP switch.
- Selective Dump Page 1, Page 2, or both in either text or graphics mode.
- Chart Recorder Simulation.
- Left & Right Margin Control.
- Line Length/Page Length Selection.
- Block graphics via 8th bit Control.
- Printer bell Control.
- Skip over Perf.
- 90 degree Rotation.
- Double Size Graphics.
- Emphasized Graphics Print.



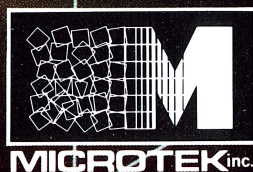
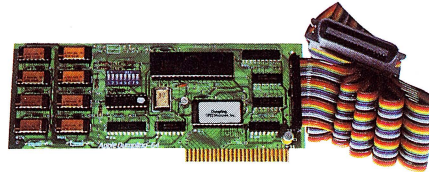
\*With special PROM and cable.

#### **DUMPLING-64** GRAPHICS PRINTER SPOOLER

The **Dumping-64** is the next logical extension to the industry standard Dumping-GX parallel interface card, allowing the computer to DUMP vast quantities of data into the **Dumping-64** for later printing, thus freeing up the computer for additional tasks.

The **Dumping-64** allows full use of all **Dumping-GX** features. In addition to the standard graphics features, the **Dumping-64** offers:

- Buffer sizes from 0 K to 64K. User upgradeable.
- Graphics Dumps to Buffer. Page 1 and/or 2.
- Multiple Consecutive Screen Dumps to Buffer.
- Software reset to clear Buffer.
- "Space Compression" saves valuable memory taken up by 'spaces' in text or spread sheets.
- Automatic Buffer Size Recognition.
- Pause while printing-immediate.
- Pause while printing-delayed.
- Resume printing.
- REMOTE pause-immediate: hooks up to telephone, switches—etc.
- Buffer ON/OFF control.
- INSERT text editing capability with Pause and Buffer ON/OFF control.

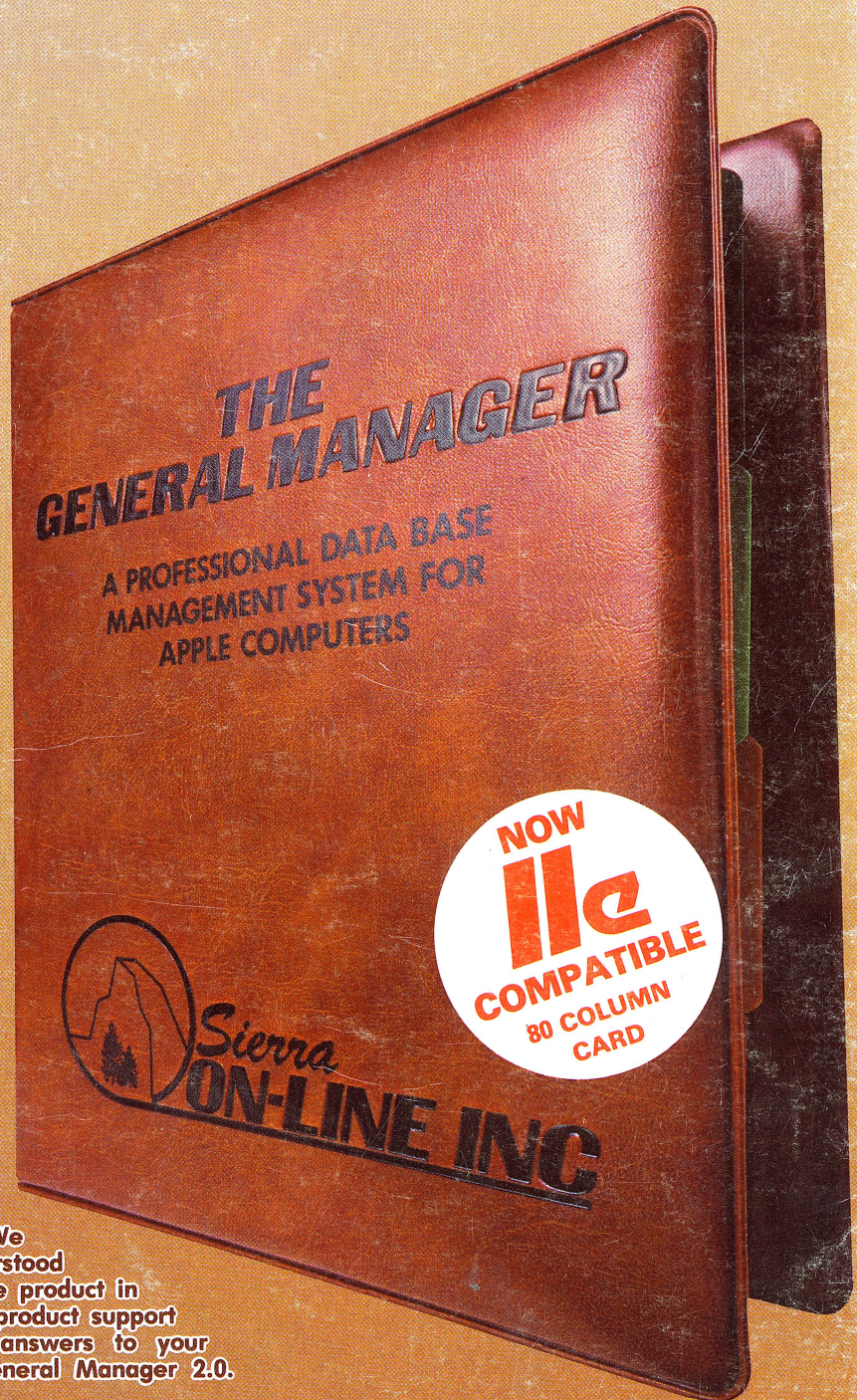


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